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COOPERATIVE PLANT PEST CONTROL PROGRAMS

FISCAL YEAR 1962

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COOPERATIVE PLANT PEST CONTROL PROGRAMS

FISCAL YEAR 1962

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INTRODUCTION

In the review of cooperative Federal-State pest control work for 1962, certain accomplishments and events stand out as highlights of the year's activities.

Tests that are well underway on a substantial acreage indicate that the new mirex bait is completely effective as an eradicant for the imported fire ant. This bait which consists of corncob grits as the carrier, soybean oil as an attractant, and a chlorinated hydrocarbon toxicant, has entirely eliminated the ants on some of the test areas. The bait is applied at 10 pounds to the acre which includes only 4 grams of the toxicant.

On June 8 of this year, the Mediterranean fruit fly was discovered again in the Miami area of Florida. Within 48 hours after the discovery, personnel had been moved into the area and eradication treatments were being applied. The surveys were expanded immediately and regulatory procedures were invoked to prevent further artificial spread. It appears from trapping results to date that the infestation is restricted to the Metropolitan Miami area and that it can be eradicated within a relatively short time.

The severe freeze of January 1962 which extended throughout the Southern States destroyed the host plants of the sweetpotato weevil, as well as many weevils in the field. With this assist from nature, which provided a seldom occurring opportunity to deal with this pest, the activities on this program were increased to capitalize on this advantage. All sweetpotatoes in protected storages were inspected and insecticide treatment applied to those storages where infestation was found.

A new outbreak of the citrus blackfly in the Linares, Montemorelos, and Allende areas of Mexico posed a positive threat of spread to the citrus growing areas in the border area of Texas. Additional funds were allotted to the program for cooperation with the Mexican Government in eliminating this infestation. Progress by the end of the year was excellent.

A hearing was held at Memphis, Tennessee, on December 5, 1961, to consider the extension of the Japanese beetle and white-fringed beetle quarantines. There was aggressive support for the continuation of these two programs to prevent spread to uninfested areas and to extend the Japanese beetle quarantine to areas that are generally infested. Based on the testimony presented at the hearing and the assurance from certain states that they would continue to eradicate infestations of the Japanese beetle as they occurred, the quarantine was extended to include four new states and regulated areas were extended in five other states that were already in the quarantined area. The white-fringed beetle quarantine was not extended.

Considering that in recent years there has been some controversy regarding the European chafer quarantine and control program, the Division requested the Eastern Plant Board to arrange for an appraisal of the cooperative

program and the European chafer problem in general. The Eastern Plant Board favored this appraisal study and arranged for an impartial committee to carry out the assignment. We expect that this review of the program will provide guidance for the state and Federal agencies in the future conduct of this program.

Nature provided an assist this year in reducing the threat of a grasshopper outbreak in the States of Montana, North Dakota, and South Dakota. Fall surveys revealed potentially serious infestations in these States; however, adverse weather during the hatching period reduced nymphal populations. These reduced populations, together with abundant grass, made it unnecessary to conduct the extensive control previously anticipated.

BARBERRY ERADICATION

Certain species of the genera Berberis, Mahonia, and Mahoberberis, are the alternate hosts of the fungus, Puccinia graminis, the cause of the stem rust of barley, oats, rye, and wheat, as well as of many wild and cultivated grasses. The barberry bridges the gap between the winter resting stage of the fungus and the summer repeating stage which attacks the small grains. Nineteen major small grain producing states are now included in the cooperative program to eliminate the barberry, one of the important sources of the stem rust disease. Inasmuch as new races of stem rust develop on barberry, there appears to be no permanent protection afforded by grain varieties currently resistant to the disease unless barberry is eradicated.

The eradication program encompasses a land area of 1.3 million square miles. It involves more than 2.5 million farms and millions of city and urban properties in the 19 states. Established infestations of barberry require reinspections at 5- to 8-year intervals to locate and destroy new plants which have developed from seed that may remain dormant in the soil for as much as 15 or more years. Approximately 21,000 square miles still require one or more reinspections to assure eradication of the harmful shrub. During the year surveys were made on 6,722 square miles of which 2,516 square miles were placed on maintenance.

Regulatory activity is an integral part of the program. Enforcement of the Federal Black Stem Rust Quarantine involves annual inspection of more than 600 nurseries and dealer stablishments. Certificates of eligibility for interstate trade are issued to those establishments complying with quarantine requirements.

All known infestations have now been cleared from more than one million square miles. One of the major program objectives is to maintain the essential rework on a time schedule that will prevent seed production on new growth and thus prevent reinfestation of worked areas. Conducting a maintenance program of an intensity sufficient to assure strict adherence to regulatory measures preventing reentry of the harmful shrub to barberry-free areas, and seasonal surveillance of stem rust development within the major grain-producing areas, are important segments of the overall control program.

During fiscal year 1962 more than 6,784,788 rust-susceptible barberry bushes were destroyed on 2,329 properties.

BOLL WEEVIL

The boll weevil infests most of the cotton-producing areas of the Eastern and Southern States, and what appears to be a strain of this weevil has become adapted to the dry, arid conditions in the border area of west Texas. This infestation poses a threat to the valuable cotton crop of

Arizona, California, and New Mexico; consequently consideration is being given to establishing a barrier to halt further spread.

A large-scale field test was conducted to determine if the weevil could be eradicated by applying insecticides before it enters the diapause. A series of aerial applications of methyl parathion was applied to the weevil infested area along the Rio Grande River on both sides of the border extending from Ruidosa in Presidio County to Fort Quitman in Hudspeth County.

A total of 2,454 acres was treated in Texas, and 5,634 acres in the Republic of Mexico during the period September 19, 1961, to November 17, 1961, at which time a heavy frost occurred. Division personnel assisted in making hibernation surveys in the Rio Grande area in January 1962, as one part of a study to determine the efficiency of the treatment.

B U R R O W I N G N E M A T O D E

The objective of this program is to prevent further spread of the burrowing nematode to other citrus-producing areas within the State of Florida, as well as to citrus areas in other states. Program operations include the establishment of chemical barriers around infested groves to prevent spread, surveys for detection of new infestations, and the delimiting of known infestations.

In Florida, of 2,582 properties surveyed, 300 with 2,236 acres were found infested. Personnel at the Burrowing Nematode Identification Laboratory, which is primarily a Plant Pest Control Division responsibility, examined more than 100,000 root samples for evidence of the disease. A 17-acre nursery in Texas was found infested.

On the regulatory program, 8,000 lots of nursery stock were heat treated prior to shipment from infested citrus and ornamental nurseries. During the year, 1,197 inspections for certification, under the quarantine, were made on 479 properties.

Good progress was made on establishing and maintaining chemical barriers around infested groves to prevent further spread. A total of 621 acres were soil treated with D-D at the rate of 60 gallons per acre. To effect eradication, this treated soil must remain fallow for a 2-year period during which time no citrus or other host plants are permitted to grow. Since the beginning of the program, trees have been removed from approximately 6,000 acres of citrus and more than 43 miles of barrier strips have been established or are in the process of treatment.

The Florida Citrus Experiment Stationand the Crops Research Division of the Agricultural Research Service were active in conducting research to find more practical ways of combating this pest. The most promising line of research is the progress scientists are making in the selection of citrus root stock varieties that show resistance.

C I T R U S B L A C K F L Y

A citrus blackfly infestation uncontrolled for 2 years can result in a complete loss of a citrus crop. This pest is a native of the East Indies and is known scientifically as Aleurocanthus woglumi. Ashby described it in 1915. In Mexico it is referred to as "la mosca prieta."

This pest was reported from Key West, Florida, in 1934. Eradication measures were immediately undertaken and the infestation was eliminated. It was next found in Sinaloa, Mexico, in 1935. From Sinaloa it spread over much of Mexico, reaching the citrus-growing area of Texas in 1955. This Texas infestation was eradicated by the close of 1956. Extensive infestations in Mexico, if allowed to develop explosive populations, would pose a serious threat to citrus culture of the United States. To prevent this a blackfly control zone is maintained adjacent to Texas in Mexico through use of chemical treatments.

At the end of the fiscal year, no infestations of citrus blackfly were known to be established within the United States, even though interceptions of infested materials at border stations are common. Surveys to discover focal points of infestations are conducted annually in Brooks, Cameron, Hidalgo, Jim Hogg, Starr and Zapata Counties of Texas.

Insecticide sprays and their application for citrus blackfly in Mexico are paid for by the Mexican Government. Trithion is now being used as the insecticide. It has been found to be much more effective against the more resistant forms of the blackfly (eggs and pupae) than malathion proved to be. Trithion requires fewer treatments and accomplishes the objective at a lower cost.

While the January 1962 freeze in the Mexican States of Nuevo Leon and Tamaulipas did not kill all of the citrus blackflies, it did result in a drastic reduction of the citrus blackfly populations, as well as in the extent of the local areas infested. The situation resulting from the freeze presented an excellent opportunity for an intensified program to eradicate the citrus blackfly in the Linares, Montemorelos, and Allende areas of Mexico. Division efforts, through channelling of additional equipment and manpower, were immediately directed toward that goal.

Citrus blackfly work accomplishments in the year ending June 30, 1962:

			In the Control Zone		
	Properties Surveyed	Hosts Examined	Properties Infested	Hosts Infested	Properties Treated
Texas	2,046	35,558	None	None	None
Republic of Mexico	17,485	1,304,276	693	24,411	120

EUROPEAN CHAFER

The European chafer was first discovered in New York in 1940 and was later collected in Connecticut, New Jersey, and West Virginia. There are approximately 900,000 acres of sodland infested, primarily in the State of New York, with a lesser area in New Jersey and a small isolated infestation in Connecticut. The West Virginia infestation has been eradicated.

A total of ~~954~~ 1455 acres was treated in New Jersey with air and ground equipment. Infestations critical from a regulatory standpoint were found and treated near the Newark Airport and Naval Air Installation, Bayonne, New Jersey. Soil treatments at airports and other shipping terminals are underway to prevent the danger of spread of European chafer, Japanese beetle, and other soil inhabiting pests.

Infestation was found in 8 new counties of New York State, comprising approximately 35,000 acres and there was some extension of the area in Connecticut. Surveys were negative in the old infested area at Capon Bridge, West Virginia, for the second year.

Vigorous enforcement of Federal-State regulatory measures on movement of susceptible commodities resulted in preventing long-distance artificial spread of this pest.

Research and methods improvement studies were continued to improve chemical lures and blacklight traps. In areas where standard electrical current was not available, 30 inverters were used to operate blacklight traps with batteries. Blacklight traps perform more efficiently in open pastures away from trees or shrubs and are considered to be more effective than chemical lures for survey and detection. Further improvements are being made on traps from deficiencies noted during the survey season. The chemical lure, N-butyl sorbate, was used on a large-scale field test and found to be effective as an attractant. It appears now that this chemical may be used in the future in traps as a chemical lure specifically for European chafer.

GOLDEN NEMATODE

The program to eradicate golden nematode from Long Island, New York, was continued with a high degree of success. Since 1946, extensive surveys have been made annually in the generally infested area of Long Island. All potato fields are sampled at least once every 3 years. In addition to the work in New York, surveys were conducted in 12 other potato-producing states.

This year's survey revealed only 2 additional infested properties with 113 acres on Long Island. Surveys in all other states were negative. Since the beginning of the program, 16,000 acres on Long Island have been found infested with golden nematode. More than 10,000 of these acres have been taken over for real estate development, leaving approximately 6,000 infested acres available for agriculture.

A program to progressively apply eradication treatments to all the known infested land was continued. To date, 1,726 acres have been treated with the fumigant dichloropropane-dichloropropene, of which 1,164 acres were treated this year. The chemical is applied at the rate of 90 gallons per acre in 2 applications of 45 gallons each, 10 days apart, with the turning of soil between applications.

The Division continued to cooperate with the New York State Department of Agriculture and Markets in the enforcement of State quarantine regulations to prevent spread of the nematode from Long Island. The New York State quarantine invoked in 1944 has been continuously in force and now includes all of Nassau and Suffolk Counties.

G R A S S H O P P E R

Control programs are a cooperative undertaking to protect range and cropland against devastation caused by outbreaks of grasshoppers.

During the fall of 1961, surveys conducted for adult grasshoppers in the Western and Midwestern States revealed 13,351,700 acres infested with 8 or more grasshoppers per square yard. Montana had the largest acreage--7,958,000--followed by California, Colorado, New Mexico, and Washington, with slightly more than one-half million acres each. Fifteen states reported grasshoppers in economic numbers.

Nymphal surveys in the spring of 1962 showed hatch in economic numbers; however, cold rains that followed reduced the population drastically in many states. The rains were a boon to the range and other grass lands. These factors resulted in holding control operations to a minimum in 1962. During the fiscal year 553,884 acres were treated. Most of this treatment was in the summer of 1961, when cooperative programs accounted for 396,895 acres in Montana, 79,971 acres in North Dakota, 32,300 acres in Wyoming, and small acreages in California, Nevada, Oregon, and Utah. Ranchers, states and the Division shared in the costs of this undertaking.

In cooperation with industry and the Entomology Research Division, the Division through its methods improvement unit, investigated new insecticides, spray droplet size, and dosages for the control of grasshoppers.

G Y P S Y M O T H

Cooperative suppression or eradication treatments were made in all gypsy moth infested states with problem areas varying in size from 150 acres in Vermont to 13,000 acres in Pennsylvania. Defoliation within the generally infested area during the previous season supported by high egg mass counts was the basis for suppressive control treatments by the states. DDT or Sevin was used for the treatments. Sevin was used where there might have been a residue problem. Over 160,000 acres were treated with aircraft and 1,285 by ground equipment.

All known infestations in Michigan, New Jersey, and Pennsylvania were treated under the cooperative eradication program. In Pennsylvania this involved 62,606 acres; New Jersey, 28,696 acres; and Michigan, 4,320 acres. Suppression and eradication treatments were made in New York along the western periphery of the infestation from the Pennsylvania border to Canada, involving 26,870 acres. To protect new growth on a burned-over area, 38,990 acres were treated cooperatively in Maine.

Approximately 47,000 traps were used in detection and survey, 7,000 of which were used in Michigan alone on over 1,000,000 acres. The new Johnson trap and synthetic Gyplure attractant was used throughout the program. It was necessary to recharge the traps with Gyplure once in midseason since it was apparent the material was losing its attractiveness.

Cooperative Federal-State regulatory measures were enforced to prevent further spread. The environs of nurseries were treated and special attention was directed at lumber and logging operations, movement of Christmas trees, and movement of other commodities subject to infestation.

The new Gypsy Moth Methods Improvement Laboratory was completed and occupied at Otis Air Force Base, Falmouth, Massachusetts, in January 1962. Methods improvement personnel cooperated with the Forest Service, and state and commercial establishments in a large-scale field test with Bacillus thuringiensis. Field tests were conducted in Maine with various stickers for the insecticide Sevin. Encouraging results were obtained with the use of the insecticide DDVP (U. S. Public Health Service specifications) in Johnson traps to kill the moths immediately after entry. If effective, the insecticide will be used in the traps instead of the tanglefoot lining which is costly and difficult to handle. Methods for development of techniques for rearing egg parasites and gypsy moth larvae in the greenhouse are continuing.

H O J A B L A N C A

Hoja blanca, a virus disease of rice, was first found in the United States in the Florida Everglades in 1957. One year later it was found in Mississippi, and in 1959 it was found in 14 Louisiana parishes. This destructive disease is spread by an insect vector, a plant hopper, Sogata orizicola, Muir.

During the year extensive surveys for the vector and disease were conducted in the rice-growing areas of 7 southern states. Over 1,000 properties and 172,000 acres were included in this survey. Although surveys since 1959 have been negative, this disease is still a threat to the Nation's $200,000,000 rice industry. By effectively surveying these areas, we stand ready to combat any new outbreak that may occur. The destruction of the vector is the only known control for the disease.

IMPORTED FIRE ANT

Emphasis on the fire ant eradication treatments is directed toward the peripheral areas to prevent outward spread and progressively decrease the total acreage infested. The development of an effective fire ant bait resulted in an increased interest of state cooperators and farmers in the eradication program. The bait is formulated with corncob grits, soybean oil, and a chlorinated hydrocarbon toxicant. Only one-seventh of an ounce of the toxicant is applied to the acre. The dosage used is not harmful to animals, wildlife, aquatic life or other organisms. There is no problem of residues on food and feed crops.

Special emphasis is directed toward the eradication of all fire ant infestations in Arkansas, North Carolina, and South Carolina, and the northern peripheral areas of Alabama, Louisiana, and Mississippi. The widely isolated infestations in Texas are being treated individually. In the 9 infested states, approximately 809,000 acres were treated with chemicals and 152,000 acres with bait. The bait became available in May and based on tests completed to date it will be our universal treatment before long except for regulatory treatments. It appears at this time that one treatment of 5 or 10 pounds will suffice for complete eradication. The use of the bait will reduce the treatment costs by about 50 percent, considering lower cost of materials used and the elimination of the cost of flagging out sensitive areas.

Detection and delimiting surveys were conducted during the winter season when the vegetative cover was the lightest. New infestations were found in each of the 9 infested southern states. For the most part these resulted from the normal spread of existing infestations.

Cooperative Federal-State regulatory measures were enforced to prevent further spread. Special emphasis was directed toward treatment of nurseries; logging, lumber, and stump removal areas; and sand and gravel pits. Roadsides were treated in some instances to prevent establishment of colonies on important highways.

Methods improvement studies were continued to determine the effects of aging of fire ant bait in relation to acceptability, dosage, use of alternate attractants and carriers. The effect of the bait on harvester ants is under observation in field test plots where they are jointly infested with fire ants. The comparative effectiveness of 5 and 10 pounds of bait is under study. Other chemicals that may have a longer effective residual action are being tested to find a substitute for the present chemical mirex. Insecticide formulations are continuously investigated for use in regulatory and certification treatments.

JAPANESE BEETLE

A public hearing was held in December 1961 to consider the need to extend the Japanese beetle quarantine to 10 additional states where infestations have become established in recent years. Six States--California, Illinois,

Iowa, Michigan, Missouri, and Tennessee--committed themselves to a vigorous program of eradication of Japanese beetles therein. The States of Georgia, Indiana, Kentucky, and South Carolina are being quarantined and placed under regulation in whole or in part. While this extension adds to the quarantined area, there still remains to be protected from infestation in states beyond, a great land area where 84 percent of our major crops are grown.

Progress has been made in treatment of airport turf to prevent spread of insect pests by aircraft. More than 70,000 acres of civil and military airport turfed areas have received insecticidal treatments to destroy the soil-inhabiting forms of this and other pests. As a side effect, such treatment provides an unfavorable environment for soil-inhabiting insects which may come from other countries in aircraft. This phase of the program is being favorably considered abroad. Orly Field, Paris, France, will be so treated this year by French agricultural authorities. When facilities permit, this means of preventing spread will be extended to rail and truck terminals in and near infested areas.

The infestation at Sacramento, California, 2,000 miles west of any other infestation, is under most vigorous eradication effort. Foliage and soil applications of insecticides are being applied to infested spots and liberal environs. More than 93,000 acres of outlying infestation in states along the periphery of general infestation and in California were treated with insecticides to eliminate beetles. Nearly 29,000 traps were employed in border states and at selected spots in western and southern states to detect spread. At the close of the year limited extensions of infestation had been found in Yolo County just west of Sacramento, California. No beetles were found in the Gulf States nor in Arkansas or Oklahoma; nor was evidence of infestation found west of the Mississippi River other than at Sacramento, California, and St. Louis, Missouri.

K H A P R A B E E T L E

During the year nearly 43,000 properties were inspected for this destructive grain pest in Arizona, California, New Mexico, and Texas. The beetle had previously been found in these States. Nearly 5,000 properties were inspected in other states. More than 800 properties were inspected in Mexico, where the last known infestation had been fumigated early in the year. During the year, 10 premises involving about 4 million cubic feet were found infested--9 in Arizona, and 1 in California. All these properties were treated or are scheduled for treatment.

At the close of the year the property of a feed dealer in southeastern Arizona was found infested. In tracing his sales, about a dozen other infested properties subsequently were found. This development emphasizes the importance of continued surveys to detect incipient infestations before they become widespread. Such incipient infestations may stem from isolated undetected infestations or from low-grade infestations which can escape notice in imported material.

During the year more than 6 million cubic feet of storage space on 15 properties were fumigated. Some of these related to premises found infested late in the previous year. Infested properties were placed under regulation and all host material shipped therefrom was fumigated until the entire premises received the eradication treatment.

M E D I T E R R A N E A N F R U I T F L Y

The first infestation of Mediterranean fruit fly was found in Florida in 1929 and was eradicated by the latter part of 1930. In April 1956, it again became established in Florida and was again eradicated by late 1957. Since then, an intensive trapping program across 45 counties of the State, involving about 8,000 trap sites, operated on a 3-week inspection schedule, has been in operation.

On June 8, 1962, specimens were again trapped in the Miami area of Florida. By the time the month drew to a close, there were known infestations at 8 general locations in Dade County and at 2 locations in Broward County. By June 30, the number of traps in Dade County was increased to 4,500 and in Broward County to 1,500. Plans provide for the operation eventually of approximately 16,000 traps within the State of Florida.

Quarantine regulatory procedures were immediately invoked with commercial shippers of regulated articles being placed under dealer-carrier agreements to expedite shipment of host commodities. Seven fumigation chambers in Dade County and one in Broward County had been approved for certification treatments by the close of the month. Nurseries in the regulated area were treated with 5 pounds of dieldrin per acre.

A program to eradicate the Medfly in Florida was well underway as the month drew to a close. Approximately 114,000 aggregate acres had been treated with bait spray (1.2 pounds of 25% malathion, 1 pint of sauce base in water to total 1 gallon for a 1-acre treatment). This provided for one complete coverage of the 10 initial spray areas, totaling approximately 63,000 actual acres, and 3 complete coverages for those areas initially found infested.

Applications are on a 7-day schedule, with the exception that hosts in the immediate vicinity where specimens are taken also will be treated with ground equipment midway in the schedule. In the immediate areas where larvae are found, all host material and fruit on trees are being picked and destroyed. Ground surface under infested hosts will be treated with dieldrin at the rate of 5 pounds per acre.

M E X I C A N F R U I T F L Y

The Mexican fruit fly (Anastrepha ludens) is a native of northeastern Mexico. It was discovered in southern Texas for the first time in 1927. It does not survive the summers in Texas but migrates by flight from

Mexico each fall and reestablishes infestations in Texas. These infestations in Texas usually reach the maximum by the following March and April. It was not until 1953 that the pest was found well established approximately 185 miles south of the Arizona border near Hermosillo, Sonora, Mexico. The Mexican fruit fly attacks citrus and many other kinds of fruits. The larvae resulting from eggs deposited just beneath the rind, or skin, of the fruit renders the fruit unfit for human consumption.

No practical control of the pest in the areas of general infestation has been demonstrated. For this reason, surveys must be maintained as a basis for invoking requirements regulating movement of certain fruit from infested to noninfested areas. Surveys are also used to detect promptly incipient infestations periodically occurring in western Mexico and California.

More than 5,400 trap sites were established in strategic areas during appropriate periods of the year to aid in locating points of infestation. Eleven hundred of these were placed in the group of the 10 southernmost Texas counties. As a result of this 1962 trapping in Texas, points of infestations were found limited to Cameron, Hidalgo, and Starr Counties. None of the 2,000 traps operated during the year in San Diego County, California, revealed any infestation. Inspection for infested fruit begins as soon as adult Mexican fruit flies are trapped.

Regulatory treatments and inspection of fruit moving into Arizona, California, Florida and other citrus-producing areas, from Texas or Mexico are serving to protect these States from infestation. However, the opening of new Mexican highways and increased traffic and a new railroad to western Mexico have resulted in periodically finding both infested fruit and adult flies in the northern Baja California area. Fumigation of grapefruit moving out of infested areas is required when fruit flies are present.

When specimens are found in Baja California or in the State of California, immediate and intensive treatment programs are undertaken to eradicate the flies before an infestation becomes established. As an added precaution, a cooperative spray program conducted in San Diego County thrcugh summer, fall, and spring months resulted in the scheduled spraying of 850 acres involving more than 700,000 susceptible host plants. The State of California assumed the responsibility for application of the spray. Across the border from San Diego County, in the vicinity of Tijuana, the cooperative program with Mexico resulted in spray application to more than 74,000 host plants distributed over more than 15,000 acres.

Some 1962 Mexican fruit fly work accomplishments:

State	Traps	Fruit Flies Trapped	Properties Infested	Hosts Sprayed
Arizona	25	None	None	None
California	2,072	None	None	204,087
Florida	456	None	None	None
Texas	1,115	65	22	None
Baja California	1,800	7	7	74,838

MORMON CRICKET

Cooperative control programs are undertaken to protect rangeland and crops from the Mormon cricket.

Surveys conducted during the summer of 1961 showed some solitary crickets and one band appearing on Conservation Reserve Land in three counties in Idaho, several infestations consisting of solitary unbanded populations in Montana, Nevada, Oregon, Utah, Wyoming, and northwest Colorado. Acres infested in the several States totaled 64,800.

Colorado	5,000
Idaho	4,000
Montana	10,000
Nevada	23,000
Utah	22,000
Wyoming	800

Requests were received to control crickets on Bureau of Land Management and Forest Service lands in San Juan County, Utah, and on Forest Service and private land in Millard County. A total of 24,357 acres was baited in the two counties.

PHONY PEACH AND PEACH MOSAIC

The successful completion annually of these two programs has permitted continued commercial peach production in areas where the diseases are present; otherwise, such production would be unprofitable.

In 1962, 6,707,690 peach trees were inspected and 19,186 found infected with phony peach disease. This low disease incidence of 0.3 percent may be contrasted with the incidence of 2.5 percent in 1952. On the peach mosaic program, 3,849,599 trees were inspected in 1962, and 1,184 trees found infected. This low incidence rate of 0.03 percent has been maintained since 1955 and may be compared with that of 4.16 percent in 1935.

One of the factors in attaining this low incidence rate is the intensive inspection program maintained in relation to the location, management, and inspection of peach nurseries and budwood sources. In 1962 in the peach mosaic area, 24 nurseries and dealer properties were inspected as well as all budwood sources. These measures plus certification of stock moving from the regulated areas furnish complete protection to peach growing interests in the nonregulated areas.

Incidence of both the diseases has been reduced through programs of intense inspection by trained personnel to locate trees in early stages of infection. These trees are then promptly removed by the growers before the infection spreads. Phony disease is spread by an insect vector. The program also includes the destruction by use of herbicides of wild plum in the vicinity of orchards since plum serves as a reservoir of the disease. Research is underway for the control of the mite which serves as the vector in the spread of peach mosaic.

PINK BOLLWORM

Despite cultural control and regulatory practices, some loss occurs each year from the pink bollworm. In addition to surveys conducted in many of the principal cotton-growing areas, surveys were conducted in Florida on wild cotton and hibiscus where relatively few specimens were collected. Pink bollworms were fairly numerous in parts of Texas and the Republic of Mexico. In the eradication area in Arizona, only 2 moths were caught in light traps during the year--1 in April and 1 in September. Inspection was again negative in Arkansas, California, Louisiana, Mississippi, and Nevada.

Eradicative treatments were applied to the central Arizona infestation. In 1959, 75,000 acres required treatment; in 1960, 32,000 acres were treated; in 1961, 11,000 acres were treated, while only 1,100 acres required treatment in 1962. Plowup dates and planting dates were enforced in the regulated areas of all the infested states.

Methods improvement scientists are working on the improvement of inspection techniques with gin trash machines and light traps, and the development of more effective methods of control.

SOYBEAN CYST NEMATODE

The soybean cyst nematode is known to occur in the States of Arkansas, Illinois, Kentucky, Mississippi, Missouri, North Carolina, Tennessee, and Virginia. More than 70,000 acres have been found infested through soil sampling or evidence of the nematode on roots of the host crop. In order to develop a more realistic estimate of the total infested acreage, Survey and Detection Operations reviewed the survey pattern and procedures and other pertinent factors with state Plant Pest Control supervisors in

charge and other plant pest control staff members, and with the state officials in the principal infested states. The revised estimate indicated about 360,000 infested areas.

During the year, surveys were conducted in 25 states on more than 1 1/2 million acres. Soybean cyst nematodes were discovered on 10,000 additional acres in the known infested states. No new states were found to be infested this year. In the infested states, cooperative Federal-State regulatory measures were enforced to prevent further spread.

Close liaison was maintained with officials of the American Soybean Association and the National Soybean Processors Association. These organizations in turn keep their members posted on the problems and progress associated with the soybean cyst nematode program.

Field-scale studies were continued in North Carolina and Tennessee to find effective ways of controlling the soybean cyst nematode. Soil fumigants have proven 95 to 98 percent effective, but they are too costly to be economically useful to growers. Work is continuing on the program to develop resistant varieties and to determine the effectiveness of crop rotation as a control measure.

S U R V E Y A N D D E T E C T I O N

The cooperative insect survey and detection program is a Federal-State undertaking to determine and report the abundance of economic insects and certain related plant pests of economic importance. The information obtained, plus many timely special reports of interest to entomologists and agricultural workers, are published weekly in the Cooperative Economic Insect Report. About 3,500 copies are distributed each week. In 24 states, cooperatively financed entomologists devote full time to the reporting service during the active insect season.

Emphasis is placed on the early detection of pests not known to occur in the United States and the occurrence of known economically important pests in new areas. As an aid to the detection program, detailed information on insects not known to occur in this country is published regularly. To train cooperators and stimulate interest in insect detection, a series of workshops are held throughout the country each year. In 1962, 10 workshops were held in 8 states and timely information was presented to 340 individuals representing 17 different agencies.

The Division's program surveys are evaluated and strengthened by installing new procedures, many of which are developed by entomological research, others through methods improvement on the job. Special service surveys such as grasshopper, Mormon cricket, beet leafhopper, and potato psyllid are conducted annually.

S W E E T P O T A T O W E E V I L

The sweetpotato weevil infests sweetpotatoes in the field, in beds, and in storages. Surveys are made each year to determine infested and weevil-free properties and to provide information which is needed to determine where control or eradication practices will be followed to protect the sweetpotato crop.

Control is attained by the application of insecticides to the seedbed, to the planted row, and to potatoes going into storage. The wild morning glory--the only wild host of the sweetpotato weevil--is destroyed where it provides a reservoir of infestation.

In January of this year, the below-freezing temperatures in the sweetpotato growing areas of the Southern States reduced populations of the sweetpotato weevil to the lowest point in years. Weevils in the field were killed outright, volunteer sweetpotato plants, debris from potato harvest in the fields, and wild host plants which serve as the winter food supply were destroyed by the frost. To take advantage of this assist from nature, additional funds were made available to this program, principally to provide for the inspection and treatment of potatoes in storage.

In the course of the routine sweetpotato weevil program in 1962, 10,000 acres of infested plants and seedbeds were chemically treated and 35,000 acres were treated mechanically. In the fall more than a million bushels of potatoes going in storage were dusted with insecticide. Under the expanded program in the spring more than 40,000 sweetpotato storage facilities were inspected in the infested states and some 1,500 infestations were found. The infested facilities were treated with insecticides and potatoes and scraps left in the storages were destroyed. Only one weevil infestation was found in wild morning glories as contrasted with the condition in the spring of 1961 when large numbers of weevil-infested morning glories were found in these same areas.

The added attention given to this program this year greately reduced infestations of this pest. However, there are residual populations in the principal sweetpotato growing states that will require attention if we are to hold the advantage that was gained through the January freeze.

W H I T E - F R I N G E D B E E T L E

During the year, increased emphasis was placed on survey in states bordering the generally infested area in order to determine to what extent the beetle may have spread. Treatment of all known infestations in these periphery states has been completed. A program for re-treatment of nursery lands and other commercial locations to insure continued eligibility for movement of products under the quarantine was inaugurated.

Surveys in the generally infested states revealed more than 150,000 newly infested acres. In addition, intensive surveys were made in Arkansas, Kentucky, and Virginia. No additional finds were made in Virginia. In

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INSTRUCTIONS TO BINDER

	Do not trim.		Overcast.
	Cut flush.		Tip in or mount on guards.
	Dummy inclosed.		Make dummy.
X	Bind all parts as arranged.		Lace boards, reinforce hinges.
	Trim all edges lightly.		Agate edges.

STYLE OF BINDING		COLOR	
	Half morocco.		Red.
	Half cowhide.		Black.
	Buckram back only.		Yellow.
X	Buckram.		Brown.
	Duck.	X	Green.
	Cloth sides.		Tan.
	Board sides.		Blue.

SPECIAL DIRECTIONS

Lettering - Gold

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found in the small soil-treated location
tation (6 adult beetles) was discovered
e at Hazel in Calloway County. In Arkansas,
additional acres. During the 1962 season,
adult beetles were discovered in Greene
age had occurred to crops, including
les had been found previously in the
t such a high altitude.

regulatory purposes was made on 19,059
f some land planted to nursery stock. A
and trucking points where regulated commodi-
nd loaded was undertaken with especially
sissippi.

white-fringed beetle was applied to 139,107
on of this acreage accrued from treatments
the imported fire ant.

iga asiatica), in North Carolina and South
known report of this parasitic plant in
eed is a destructive pest in South Africa
of the Eastern Hemisphere. It attacks
than 60 species of the grass and sedge
plants. The objective of the cooperative
to prevent spread and to develop proce-
al eradication.

eys were continued in the two known infested
conducted in 22 other corn, sorghum and
The known infested area is confined to 20
10 counties in South Carolina. This year
infested with witchweed. Only one infested
the new counties.

herbicide work was done by commercial
ion of Plant Pest Control personnel. More
d-infested land received from 1 to 4 post-
D at a rate of 1/2 to 1 pound per acre. An
treated. The control program is timed so
d before seed matures.

were effectively administered during the
eed spread. Most of the regulated crops
d area prior to shipment to outside markets

with a minimum of extra cost and inconvenience to the grower. The regulatory program also provides for the fumigation of construction and harvesting equipment that becomes contaminated while being used on infested properties.

Research and methods improvement scientists are continuing their search through laboratory and field studies for more effective ways of dealing with this pest. The most recent advancement has been the discovery of several stimulants that cause witchweed seed to germinate in the absence of host plants. Work is underway to identify the natural stimulant complex which has been isolated from corn with the idea that it could be produced synthetically. This could be the key to a more effective approach to witchweed eradication.

FOREIGN TECHNICAL ASSISTANCE PROGRAMS

Major progress during this period was made in the planning and implementation for expanded locust control assistance in the East African area. Although field operations have not increased greatly during the period, plans for expansion are underway. Additional personnel are being recruited, 42,000 gallons of insecticide are on hand, and 4 large spray planes and other vehicles are now available for this work. Locust control plans are being integrated with national and international organizations.

The newly formed East African Desert Locust Control organization with which the Regional Insect Control Project will cooperate is expected to serve a major role in future control operations in that area. The RICP coordinator will serve as one of the two technical advisors to the organization. RICP personnel and United States support have been influencing factors in the successful formation of this organization.

A comprehensive insect pest survey was completed in Afghanistan and two years' work on a compilation of the major agricultural pests of the Near East and African areas is nearing completion. Special attention also was given to the tobacco blue mold problem in Turkey, and a survey of the locust situation in the Trucial Oman area of Saudi Arabia near the Persian Gulf.

We cooperated with the Central Treaty Organization in the preparation of copies of U. S. Department of Agriculture records on economic insects for all of the CENTO countries. During the year Morocco was added to the list of countries served by the project and work was resumed in Turkey.

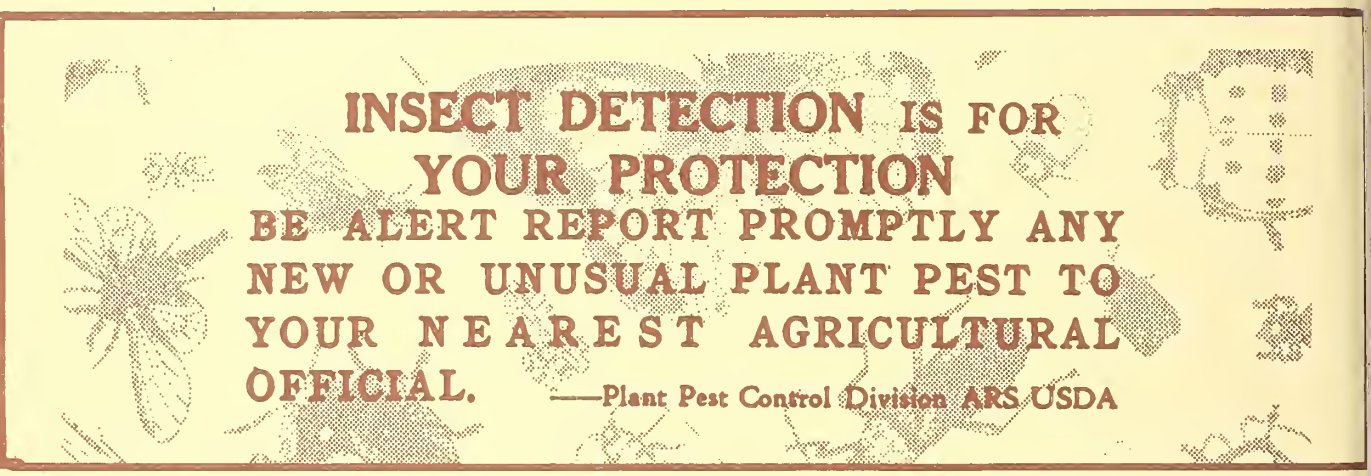
SPECIAL SURVEYS

Special surveys are conducted annually for boll weevil, beet leafhopper, potato psyllid, and other pests as they occur, to inform and guide affected growers and industry.

The potato psyllid survey was conducted in the spring breeding area of Arizona and California February 27 to March 1, 1962. Populations at all stops were higher than for any year since the survey began, indicating a potentially very severe outbreak this season. States to the north were advised of this condition, and surveys were conducted later in the affected states. The reverse was true in Texas and New Mexico, where populations were much lower than in 1961. This survey was completed March 29.

Cooperative beet leafhopper surveys, the results of which inform agricultural interests of spring populations and potential infestations, were conducted in the southern desert breeding ground of southern Utah and Nevada, southeastern California, and central Arizona. Populations were lighter than in 1961, and the movement was expected to be light. In March, the survey was conducted in New Mexico and Texas, where the leafhopper populations per 100 square feet were 3.9 in Texas and 4.3 in New Mexico.

Surveys were conducted for determining the number of boll weevil adults that went into hibernation in the fall of 1961. In Mississippi the number was much higher than in 1960. Other states were comparable with past records. The spring survival surveys in northeast Louisiana, Mississippi, and Texas showed survival in Louisiana comparable with 1961, Mississippi somewhat higher (13.59 compared with 8.59 percent in 1961) and survival percentage in Texas was 33.1. This compares with survivals of 31.14 and 33.7 percent in March 1960 and 1961, respectively.

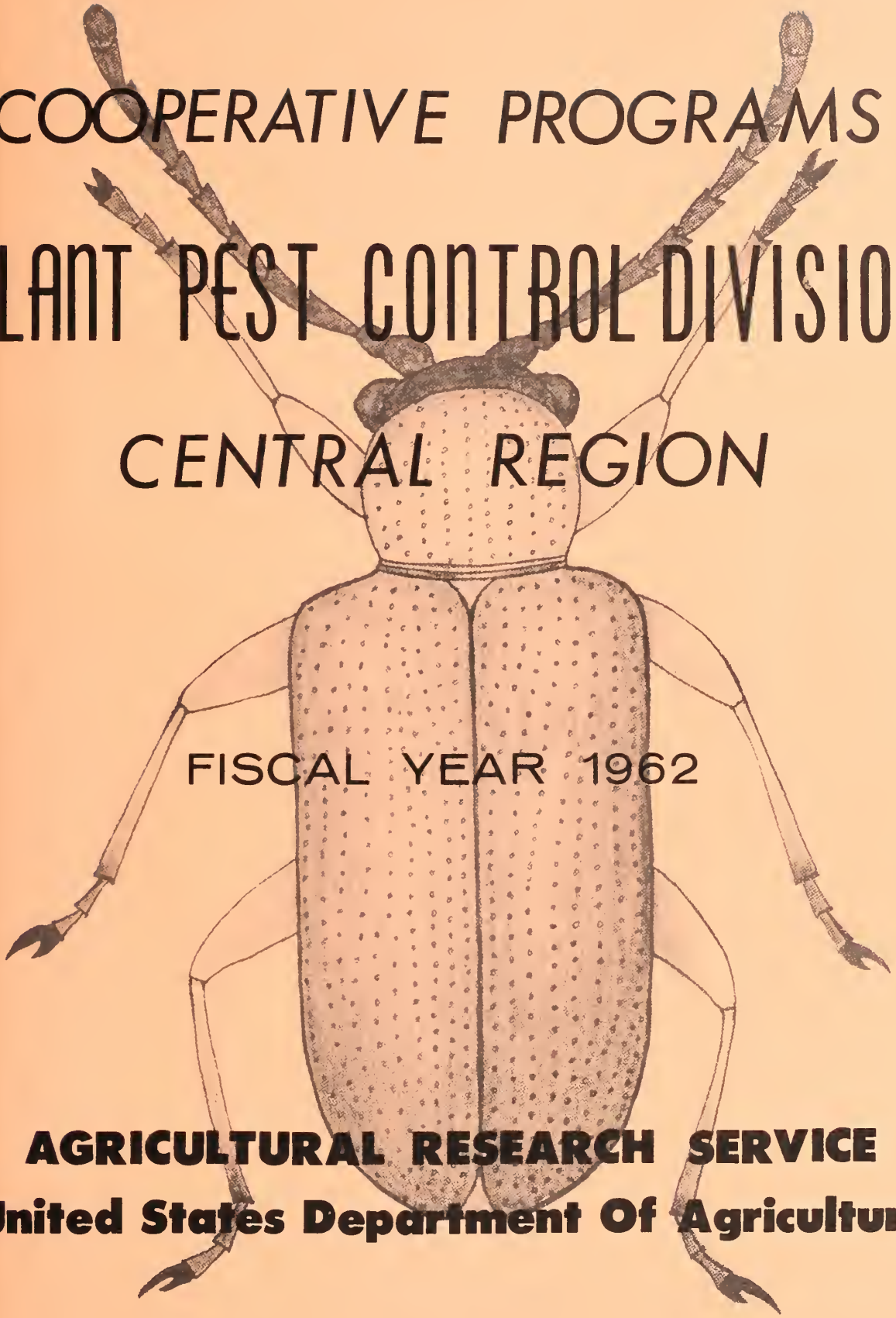

INSECT DETECTION IS FOR
YOUR PROTECTION
BE ALERT REPORT PROMPTLY ANY
NEW OR UNUSUAL PLANT PEST TO
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COOPERATIVE PROGRAMS

PLANT PEST CONTROL DIVISION

CENTRAL REGION



FISCAL YEAR 1962

AGRICULTURAL RESEARCH SERVICE
United States Department Of Agriculture

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INTRODUCTION

The Central Region is charged with the responsibility for the operation of twelve programs of the Plant Pest Control Division. Also, the Regional Supervisor participates in the overall planning and direction of the functions and activities of the Cooperative Rust Laboratory at St. Paul. All programs are cooperatively conducted by the Division and State agencies. There are thirteen states in the Region, with eight resident supervisors in charge of the field programs.

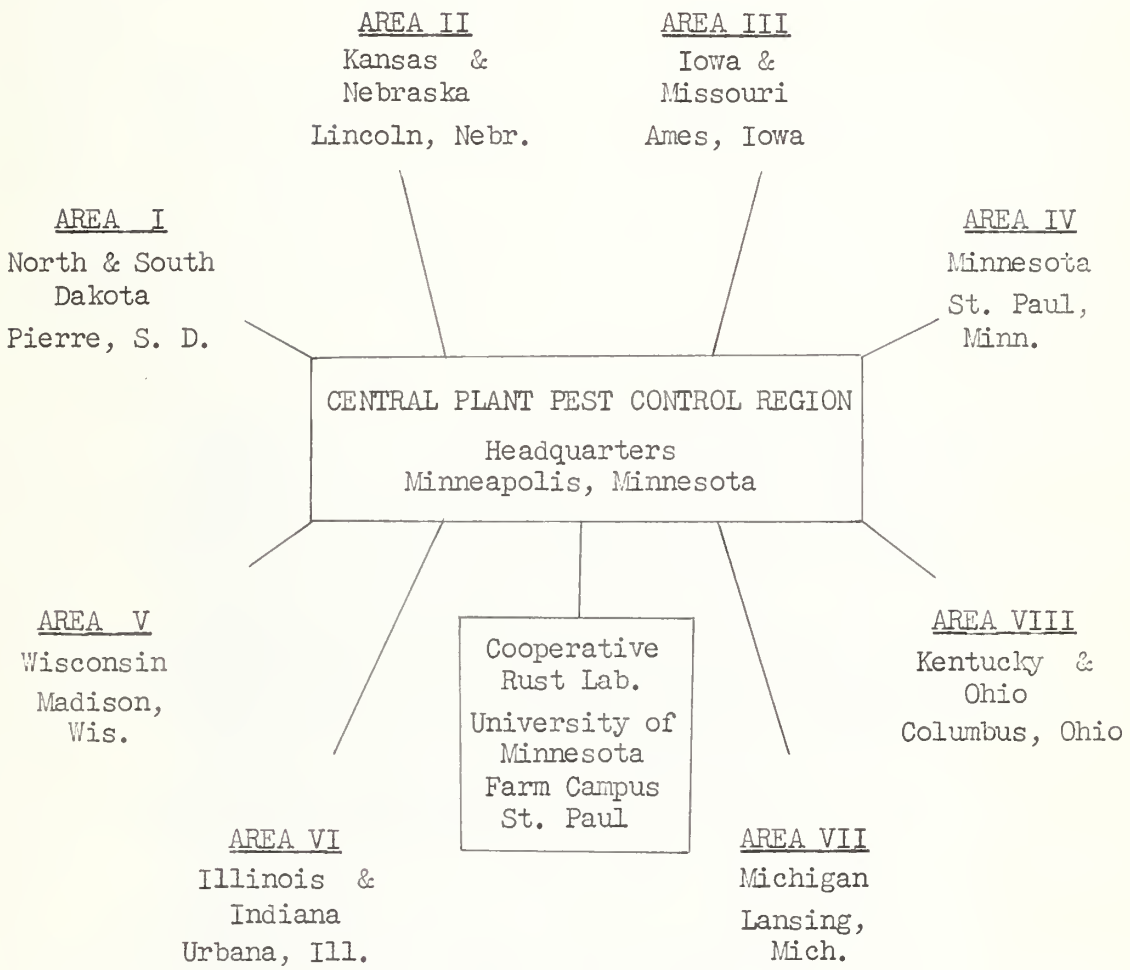
Participants in the programs are the appropriate regulatory agencies of the State Departments of Agriculture and/or Conservation. They actively participate in the planning of survey, control, and regulatory activities of all programs. They provide funds, equipment, and services, and hire seasonal personnel as needed to conduct the various phases of the programs. The State Extension Service, through county agricultural agents and specialists, assist in program operations by providing their facilities to disseminate information through the press, radio, and television media.

State Experiment Stations provide office, greenhouse, and storage space for field personnel. Research activities of the various stations affecting the Division's programs are an important source of information and technical assistance.

The Crop Quality Council, Minneapolis, Minnesota, representing industry in nearly all phases of agriculture, actively supports the Division's programs, both at the Federal and State levels. The Council provides current information on crop development and the severity and prevalence of insects and plant diseases. Extensive observations by specialists of the organization make it possible for them to forecast crop damage and estimated losses.

The following pages include brief summaries of the Central Region's program activities for the 1962 fiscal year.

ORGANIZATION



BARBERRY ERADICATION

The barberry eradication program is a continuous, year-round operation, and progress follows the same general pattern each year. During the fiscal year 1962, however, some adjustments were made due to unusually severe winter weather and an over-abundance of rainfall in the spring. In some states it was necessary to reassign work units to locations where conditions would permit effective survey and eradication.

Again this year the evidence substantiates the fact that good, intensive surveys to the probable limit of spread from fruiting bushes are necessary. The rework in several states produced an unusually large number of new locations with large fruiting bushes. In one instance a new property located in territory on maintenance was cleared of 14 large fruiting bushes and many bushes in the non-fruiting stage. In most cases the new properties harbored fruiting bushes. The finding of newly infested properties was the result of reconnaissance surveys, intensive rework, and reports from former workers and others. In a number of cases the new finds required the extension of work boundaries. As a result, there is little change in the total number of square miles requiring future intensive work.

In an effort to bring certain counties in Ohio up to rework schedule, additional temporary workers were added to bring crew units up to size for effective survey operations.

During the year, 1,517 square miles were covered intensively, and in Kansas an additional 2,273 square miles were inspected by the farmstead method. A total of 918 properties was cleared of 17,837 rust-susceptible barberries.

Regulatory activities in the Central Region involved the inspection of 212 nurseries and issuance of certificates to 36 dealers.

The following composite table shows by states the current status, progress, and future requirements of the barberry eradication program in the Central Region.

Barberry Eradication Accomplishments - Fiscal Year 1962

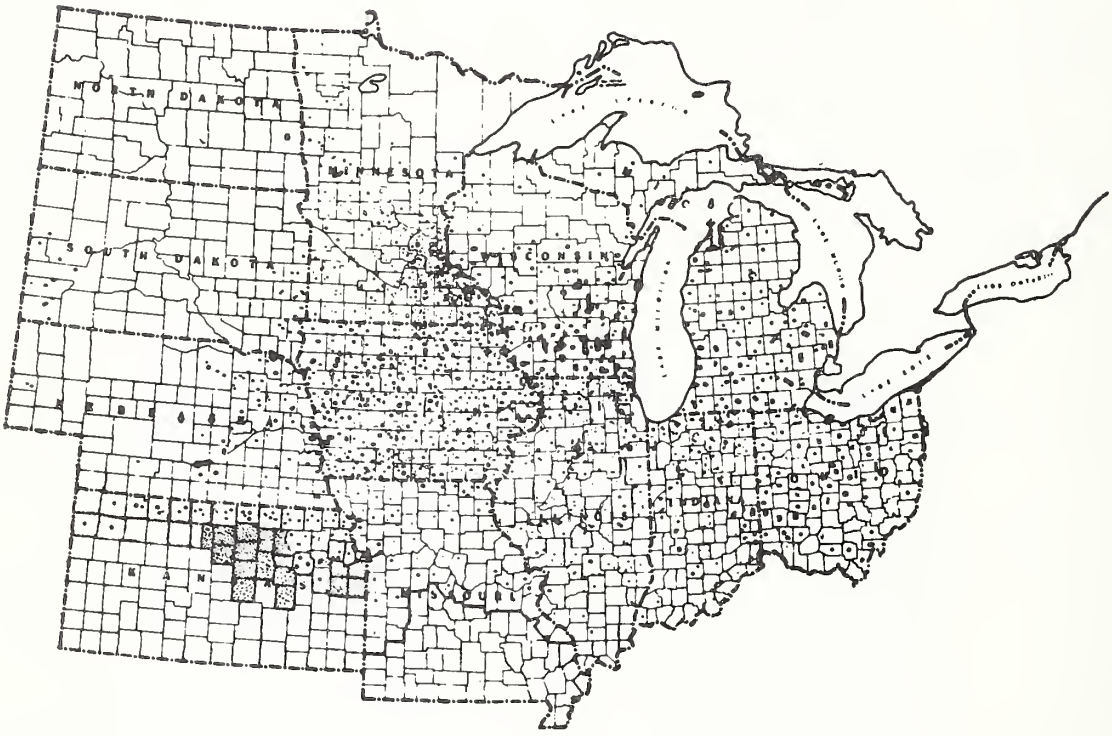
State	Square Miles Surveyed	Old Properties Reinspected	Total Properties Infested	Nursery Establishments Inspected	Total Bushes Destroyed
Illinois	67	158	19	35	172
Indiana	15	84	2	14	3
Iowa	434	822	144	9	1,382
Kansas	2,282	15	17	-	2,418
Kentucky	-	-	-	14	-
Michigan	254	859	282	28	3,965
Minnesota	219	199	59	52	1,290
Missouri	58	35	9	14	16
Nebraska	29	40	7	-	132
North Dakota	7	7	-	3	-
Ohio	156	582	101	63	3,142
South Dakota	2	4	-	2	-
Wisconsin	283	803	278	13	5,317
Totals	3,806	3,608	918	247	17,837



Hedge of Sheridan barberry found in Lincoln, Nebr., late 1961.

BARBERRY ERADICATION - CENTRAL REGION

STATUS JULY 1, 1962



	Area requiring intensive work	13,255	square miles
	Ares requiring farmstead work	12,211	square miles
	Area on maintenance	651,124	square miles

PRESENT STATUS, PROGRESS, AND FUTURE REQUIREMENTS, 1918-1962

State	Square Miles										Properties			Barberry Bushes Destroyed		
	Total in State to be Worked	Number Covered				Number Requiring Work One or More Times				No. Requiring No Future Work	Total Found to Date	No. Needing One or More Reinspections	Number Completed	Common	Native	Total to Date
		Initial Work		Rework		Farmstead		Intensive								
		Farmstead	Intensive	Farmstead	Intensive	Initial	Rework	Initial	Rework							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Illinois	56,043	56,043	34,679	4,659	7,869	0	0	0	719	55,324	20,063	2,687	17,376	2,661,078	89,781	2,750,859
Indiana	36,045	36,045	27,329	8,405	3,513	0	299	14	200	35,532	7,014	745	6,269	200,070	212,118	412,188
Iowa	56,167	56,167	44,526	4,709	12,648	0	284	213	3,852	51,818	15,885	4,684	11,201	1,326,449	125	1,326,574
Kansas	32,809	21,181	0	0	0	11,628	0	0	298	20,883	344	344	0	5,982	1	5,983
Michigan	57,481	57,481	26,637	17,096	11,456	0	0	0	1,175	56,306	19,392	4,687	14,705	6,743,692	16	6,743,708
Minnesota	80,883	80,883	32,958	28,742	8,526	0	0	0	1,198	79,685	9,389	2,254	7,135	1,016,334	0	1,016,334
Missouri	37,251	19,724	17,705	789	974	0	0	27	189	37,035	1,937	681	1,256	24,662	0	24,662
Nebraska	77,268	77,268	36,832	34,966	7,391	0	0	0	456	76,812	4,955	242	4,713	149,292	0	149,292
North Dakota	70,183	70,183	1,276	30,105	424	0	0	0	21	70,162	1,084	12	1,072	39,565	0	39,565
Ohio	40,740	40,740	32,197	6,289	12,599	0	0	0	1,883	38,857	17,726	2,674	15,052	3,802,617	0	3,802,617
South Dakota	76,868	76,868	12,906	4,538	1,531	0	0	0	208	76,660	1,574	87	1,487	136,490	0	136,490
Wisconsin	54,852	54,852	21,314	23,886	11,992	0	0	0	2,802	52,050	18,114	5,027	13,087	5,730,317	0	5,730,317
Totals	676,590	647,435	288,359	164,184	78,923	11,628	583	254	13,001	651,124	117,477	24,124	93,353	21,836,548	302,041	22,138,589

Stem Rust in 1961*

Stem rust damaged winter wheat this year from central Oklahoma northward. The estimated loss of 7 percent in Kansas has not been equaled since 1940, and 15 percent in Nebraska is the highest since 1944. Damage was 5 percent in Iowa and South Dakota, 2 percent in Oklahoma, 1.5 percent in Colorado, and 1 percent in Wyoming. The epidemic in much of this area resulted from a combination of late grain, early and widespread rust development, and favorable conditions for rust increase. In South Dakota, however, drought prevented maximum rust development.

Inoculum was not abundant early in the season, since rust was scarce in Texas and southern Oklahoma and wheat matured early. The first spore showers northward, however, fell on grain that was in prime condition to be infected, particularly in Kansas and Nebraska. In some sections of Kansas and in areas westward and northward, rust developed early in almost every field. As the rust increased, windborne inoculum became abundant, with spore counts on slides in North Platte, Nebraska, for example, moderate in number by June 9 and heavy by the 17th. Maximum counts at this station were higher in 1961 than in recent years, with a count on June 29 of over 2 million per square foot of surface and on July 2 of nearly 3.5 million. In the epidemic year of 1935, the count on June 29 in Nebraska was under 1 million per square foot.

Early-maturing varieties escaped the most severe damage, with generally high test weights. In Oklahoma, Triumph and Wichita were grown on 85 percent or more of the acreage. In Kansas, these two varieties occupied 26 and 18 percent, mainly in the southern part of the State. Wichita was commonly grown in south-central Nebraska and in a small acreage in South Dakota, where it escaped with less stem-rust damage than Nebred.

Outside the epidemic area, total damage of winter wheat was slight, ranging from none in Texas to 1.5 percent in Illinois. There was no measurable loss in 1961 in barley or rye, and none in oats except in Illinois and locally in south-central Kansas.

Spring wheat, most of which was Selkirk and the newer durums, was protected from stem rust by resistance to the predominant race 56 and in the northern and western parts of the spring-wheat area by drought.

Wheat Stem Rust. Race 56 of wheat stem rust was predominant for the fourth consecutive year. It comprised 57 percent of 1,347 isolates identified from 942 collections of rusted wheat, barley, and

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*This report includes information concerning stem-rust development in some states outside the Central Plant Pest Control Region.

wild grasses. In the hard red winter-wheat region, it comprised 65 percent of all isolates and probably accounted for most of the loss to wheat in Kansas and Nebraska. Among 14 other races identified, race 15B comprised 11 percent; 38, 10 percent; 11, 10 percent; 29, 7 percent; and 10 other races together, 5 percent.

Race 15B was especially prevalent in the spring-wheat region, where it comprised 26 percent of the isolates. Most of the isolates were virulent on Langdon durum in the greenhouse, whereas those attacking Selkirk seedlings were found less frequently. This race, however, was not collected from commercial fields of Selkirk but from other spring- and winter-wheat varieties.

Isolates of race 11E, virulent on the hitherto resistant line II-50-17 of Frontana x (Kenya 58-Newthatch) and on Bowie wheat, were widespread for the first time in 1961, occurring in 14 states and comprising about 2 percent of all isolates.

Among 113 aecial isolates of wheat stem rust from barberry, 18 races were identified. Races 11F, 48B, 59A, 111, and 126 were found only on barberry. Race 11F is more virulent on Kenya Farmer and Lee than 11E.

Oat Stem Rust. Race 6 was most prevalent among oat stem-rust races for the first time in 1961. This race and the closely related race 13 attack varieties with the White Tartar and Richland types of stem-rust resistance and are generally virulent on most commercial varieties at high temperatures. Among the total of 336 isolates identified, 14 races occurred as follows: race 6 (with 13), 59 percent; 7A, 19 percent; 7 (with 12), 7 percent; 8 (with 10), 7 percent; race 2 (with 5), 3 percent; and other races, 5 percent. Race 7A increased from the previous year, whereas 7, 8, and 2 decreased. Race 6A, virulent on essentially all commercially grown varieties, was found eight times in 7 states. Race 10A, a new race isolated for the first time, was collected on barberry in New York.

Barberry Susceptibility Tests

Thirty-five barberry species and varieties were tested for susceptibility to stem rust (*Puccinia graminis*) by inoculating principally with the wheat- and rye varieties of rust (var. *tritici* and var. *secalis*). Of the 35, 21 that were resistant in previous tests remained resistant when inoculated with different collections. Of 7 species and varieties of Berberis and 6 of Mahonia tested for the first time, *B. mouillacana* was susceptible, and *B. heterophylla*, 3 varieties of *B. thunbergi*, and *M. piperiana* were immune. The others require further testing.

ECONOMIC INSECT SURVEY

Nine of the 13 states in the Central Region have cooperative agreements with the Plant Pest Control Division in the economic insect survey program. They are Illinois, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. All other states in the Region have contributed insect reports during the field season either weekly or on an intermittent basis. The nine states listed above, except Ohio, have survey entomologists. Plans have been made to employ one in Ohio by September 1, 1962. Michigan also has indicated an interest in this cooperative program.

The survey entomologists are employees of the state in which they work. They make weekly surveys and submit reports on insect conditions to a State clearing office. These reports are released to various State agencies, individuals, and to the Plant Pest Control Division. State and Federal plant pest control personnel are urged to detect and report outbreaks of pests new to their area.

Insect detection work shops were held this fiscal year at Madison, Wisconsin; and Lincoln, Nebraska (for Nebraska and Kansas). State and Federal workers, both professional and non-professional, attended and participated in these workshops. Emphasis this year was placed on insect identification. Plant Pest Control personnel assisted with the potato psyllid survey in western Nebraska, the beet leafhopper survey in southwestern Kansas, and the chinch bug survey in Illinois, Indiana, Iowa, Kansas, Missouri, Nebraska, and Wisconsin.

Mr. Burge inspected a shipment of cobras from India to a South Dakota destination. No plant material was found in the boxes, hence no fumigation was necessary.

A black light trap and a modified Japanese beetle trap were set on the Lockbourne Air Force Base in Ohio the latter part of March. These traps were set at locations adjacent to the parking strip for overseas planes, chiefly in the interest of detecting the ~~European~~ chafer, Melolontha melolontha, should it accidently be brought into this Base from Europe. Results were negative.

The first case of Dutch elm disease was reported at St. Paul, Minnesota, in 1961. Later in the year several more infested trees were found in an area about 40 miles northwest of the Twin Cities.

Mr. Blomgren sent in a news item concerning a giant African snail, Achatina fulica, purchased by the Vilas Park Zoo, in Madison, Wisconsin, from a dealer in Florida. The Plant Quarantine Division investigated and destroyed several similar shipments of snails to various parts of the country, among them being a pair of the snails at the Como Park Zoo in St. Paul, Minnesota.

EUROPEAN CHAFER

Limited trapping and scouting for the European chafer was carried on, with negative results, this past fiscal year in Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. This insect pest has not as yet been found in the Central Region, but trapping and visual scouting will be continued.

Twenty-five black light traps were available to these areas. They were operated by Federal and/or cooperating State personnel. In June, twelve new chemical traps were distributed, as follows: Illinois - 5, Ohio - 5, and Michigan - 2.

The European chafer exhibit was placed on display in the lobby of the Federal Courts Building in Minneapolis early in the season. It was also displayed at the North Central Branch meetings of the Entomological Society of America, held in Minneapolis on March 21-23, 1962.

GOLDEN NEMATODE

Since 1949 intermittent surveys have been made in the states comprising the Central Region. A total of 52,197 field and grader samples were obtained from the important potato-growing areas, with negative results.

No golden nematode survey was made in this region the past fiscal year. Current plans are that this survey will be made a part of the survey program each year. Since the method of obtaining and processing soil samples is so similar to that of the soybean cyst nematode survey, the two can be effectively carried out together.

GRASSHOPPERS

The annual cooperative surveys indicated grasshoppers could be a potential threat to crops and some grassland areas in a rather wide corridor of the Region, beginning in central Illinois and extending in a northwesterly direction to Montana and Canada, particularly North and South Dakota. Isolated infestations were in southeast Indiana, northwest and north-central Missouri, and west-central Michigan.

The principal species in crops include: Melanoplus femur-rubrum, M. differentialis, M. bivittatus, M. sanguinipes, and Camnula pellucida. In range areas the dominant species of the usual varied complex were: Ageneotettix deorum, Aulocara elliotti, Metator pardalinus, Trachyrhachis kiowa, Amphitornus coloradus, and Arphia species.

Reports from county agents and insecticide companies indicated dieldrin, aldrin, toxaphene, and heptachlor were most generally used by farmers throughout the Region in crop areas. Aldrin was the insecticide applied under the three cooperatively conducted and financed rangeland programs.

Eight of the thirteen states of the Region reported that some voluntary grasshopper control was accomplished in the infested cropland areas. The remaining five states indicated that no control action was necessary. North Dakota reported approximately 3 million acres; Illinois, 500,000; South Dakota, 400,000; and Iowa, 350,000. Total acres reported treated in Indiana, Minnesota, Missouri, and Wisconsin varied from 100,000 in Indiana to 12,500 in Wisconsin.

Three cooperative rangeland programs were accomplished in North Dakota for a total of 71,026 acres. Total acres requiring respray equaled 8,867. The locations of these programs were: Watford City, McKenzie County; southeastern Ransom and Richland Counties; and Snake Creek Refuge, McLean County. Aircraft was used on each program.



Grasshopper damage up to 16 feet wide along margin of this wheat field. Near Ashland, Kansas.

GYPSY MOTH

As a result of the trapping and scouting activities carried out in Michigan last season, mimimum cooperative control was necessary during the current fiscal year. The 4,320 acres found infested in Ingham County was treated by aircraft during May 1962. Due to part of the area scheduled for treatment being in a milk shed, 80-S Sevin-tung oil-triton X-114-water solution was applied in the sensitive areas, and a DDT-oil solution on the remaining acreage. Only the wooded portions of the total control unit were actually sprayed. The per-acre rate of application for the Sevin-water solution was 1½ gallons and the DDT-oil solution, 1 gallon.

All trapping and visual observations made in Ohio, Indiana, and Wisconsin during fiscal year 1962 proved negative. Two positive specimens were found in Ingham County, Michigan.

Currently no gypsy-moth infestations are known to exist in Michigan or other states in the Central Region.

Gypsy Moth Accomplishments - Fiscal Year 1962

State	Acres Surveyed	Traps in Use	Industry Sites Inspected	Acres Infested	Acres Treated
Kentucky	-	30	26	-	-
Michigan	1,007,360	7,476	-	4,320	4,320
Ohio	-	197	104	-	-
Wisconsin	-	71	-	-	-
Totals	1,007,360	7,774	130	4,320	4,320

JAPANESE BEETLE

Survey, regulatory, and control action continue to be necessary in the handling of problems associated with Japanese beetle in the Central Region.

Some exploratory trapping and visual scouting was done in all states within the Region. Delimiting surveys were restricted to parts of Ohio, Kentucky, Michigan, Illinois, and Missouri. The statistical section of this report reflects the actual trapping performed and the estimated acres visually surveyed.

There were no changes in the Federal quarantine and no new counties or areas were placed under regulation during the year. State quarantines were effective in local areas of Kentucky, Illinois, and Ohio. The summer quarantine was made operative only in Marietta, Ohio.

A Federal hearing was held at Memphis, Tennessee, December 5, 1961. Proposed extension of the Japanese beetle quarantine included the States of Illinois, Indiana, Iowa, Kentucky, Michigan, and Missouri, in the Central Region. Other states listed were California, Georgia, South Carolina, and Tennessee. The results of this hearing had not been publicly announced at the close of this fiscal year.

The study which was begun in 1960 to determine the probable spread of the Japanese beetle by aircraft was continued this season. Inspection points within the Region were: Cleveland, Ohio; Detroit, Michigan; Chicago, Illinois; Indianapolis, Indiana; St. Louis, Missouri; Kansas City, Kansas; and Minneapolis, Minnesota. This inspection also provided additional information concerning the effectiveness of treating aircraft with insecticides. The only airport in the Region declared hazardous was Cleveland-Hopkins, at Cleveland, Ohio. During the fiscal year 1962, a total of 558 acres was soil-treated at the Lambert Municipal Airport, St. Louis, Missouri. Previously, 867 acres had been soil-treated at six different airports in Ohio.

Cooperative control programs involving the soil treating of known infested areas by aircraft and ground equipment included Illinois, Indiana, Kentucky, Michigan, Missouri, and Ohio. The statistical section of this report details the areas treated, by states.

During the year, 55,000 grubs were delivered to Dr. Harlow H. Hall of the Northern Utilization and Research Development Laboratory, Peoria, Illinois, for his research work on the milky disease.

Japanese Beetle Accomplishments - Fiscal Year 1962

State	Acres Surveyed	Traps in Use	Acres Infested	Acres Treated	
				Ground	Air
Illinois	-	2,451	41,142	1,164	17,300
Indiana	-	813	56,140	431	-
Iowa	140	1,906	-	-	-
Kansas	-	62	-	-	-
Kentucky	1,570	1,740	136	79	913
Michigan	-	19,341	8,133	2,918	5,215
Minnesota	-	1,033	-	-	-
Missouri	-	4,180	245	972	-
Nebraska	-	91	-	-	-
North Dakota	-	18	-	-	-
Ohio	69,838	6,225	180,729	3,232	-
South Dakota	-	172	-	-	-
Wisconsin	-	700	-	-	-
Totals	71,548	38,732	286,525	8,796	23,428

Regulatory - Ohio alone was involved in inspection for certification, as follows:

Nursery (Acres)	15	Commodity Treatment:	
Other (Acres)	4	Fumigation	15
Processing Plants	3,369	Dipped	60
Shipping Points	6	Soaked	141
Other	255	Heated	151
		Other	2,055

Acres treated for certification:

Soil - 1,081

Foliage - 3,085



Japanese beetle feeding damage to wild grape leaf.



Spray unit equipped to spread granular or liquid insecticide.



Buffalo turbine in operation. Cleveland-Hopkins Airport, Ohio.

KHAPRA BEETLE

During the past several seasons over 5,100 khapra beetle inspection surveys have been made in the Central Region. Specimen collections submitted now total 794, all of which have been negative. Inspections have been made of principal storage warehouses, seed houses, grain processing plants, grain bins, and miscellaneous cargo unloaded from ships of foreign origin.

On May 23, 1962, one freight car was fumigated at Ashland, Kentucky. The car had been loaded with a consignment of mangrove bark from a ship found to be infested with khapra beetle. A second car had also been unloaded at the same location in Ashland and then routed on empty by the railroad. It was intercepted at St. Paul, Minnesota, inspected, and determined to be clean.

This year inspections were made in eight of the thirteen States of the Region.

Accomplishments - Fiscal Year 1962

State	Number of Inspections	No. Specimen Collections Submitted	Infested Sites F.Y. 1962	Total Infested Sites	Sites to be Treated
Illinois	2	0	0	0	0
Michigan	112	0	0	0	0
Minnesota	60	0	0	0	0
Missouri	4	0	0	0	0
North Dakota	5	0	0	0	0
Ohio	4	0	0	0	0
South Dakota	8	0	0	0	0
Wisconsin	52	0	0	0	0
Totals	247	0	0	0	0

PHONY PEACH AND PEACH MOSAIC

Since 1931 periodic surveys for phony peach have been made in the peach-growing areas of the states comprising this Region. The survey has included 14 counties in Illinois, 1 in Indiana, 6 in Kentucky, and 15 in Missouri. This fiscal year, orchards in Kentucky and Missouri were surveyed. Diseased trees, when found, were removed by the property owner. Jackson, Massac, Pulaski, and Union Counties, Illinois, and Dunklin County, Missouri, were under regulation by the respective states. The incidence of phony peach disease continued to remain low.

Annual inspections of orchards for the presence of peach mosaic have been negative. Stark's Nurseries at Louisiana, Missouri, and across the Mississippi River in Illinois, and the Neosho Nursery at Neosho, Missouri, were inspected for peach mosaic this fiscal year.

Accomplishments - Fiscal Year 1962

State	Number Surveyed: Properties	Number Surveyed: Acres	Number of Hosts Examined	Properties Infested	Hosts Infested	Trees Removed
Phony Peach						
Kentucky	25	-	27,002	1	1	1
Missouri	76	-	93,245	4	10	10
Totals	101	-	120,247	5	11	11
Peach Mosaic						
Missouri	7	-	670,414	-	-	-
Totals	7	-	670,414	-	-	-

PINK BOLLWORM

The proximity of known infestations of pink bollworm south of the bootheel counties in Missouri constitutes a threat to the cotton-producing states. This pest is not known to be present in the Central Plant Pest Control Region, but continual inspections are being made to determine its occurrence.

The work in Missouri is the cooperative effort of the Missouri Department of Agriculture and the Plant Pest Control Division. This year a total of 3,364 bushels of gin trash, representing 24,802 bales of cotton, was inspected. In addition, lint cleaner inspections were made of 30 gins covering 6,868 bales of cotton. A number of inspections of lint cleaners and cotton gins were also made in the southwestern counties of Kentucky. All inspections were negative.

Regulatory activities consisted principally of checking of cotton products to northern destinations for processing and use. Two uncertified cars of cotton linters were received from the regulated area at Mound City, Illinois, for storage purposes. These two shipments, following fumigation under plant pest control supervision as an alternate to returning them to origin were consigned to storage.

Pink Bollworm Accomplishments - Fiscal Year 1962

State	Surveyed		Inspection for Certification		
	Properties	Square Miles	Properties	Processing Plants	Other
Illinois	-	-	6	107	-
Indiana	-	-	1	11	-
Kansas	-	-	-	66	-
Kentucky	-	-	-	20	2
Michigan	-	-	-	8	-
Minnesota	-	-	-	14	-
Missouri	72	3,664	-	10	-
Nebraska	-	-	-	9	-
Ohio	-	-	-	4	-
Wisconsin	-	-	-	40	-
Totals	72	3,664	7	289	2

SOYBEAN CYST NEMATODE

Some survey was conducted in all states of the Central Region for soybean cyst nematode. Intensive coverage was made of important bean-producing areas in Illinois, Kentucky, and Missouri. Symptom and random soil sampling were the methods used in the other states, all of which are important producers of soybeans. Some aerial observations were made in the three states where the pest is known to be present. Fields that showed symptoms were pinpointed and samples taken by ground crews. As a result, some new infestations were discovered within the regulated areas of Missouri.

Many fields in Kentucky and Missouri were severely damaged. In Missouri alone, 4,750 acres involving about 175 fields in four counties suffered heavy loss.

A number of growers who previously experienced losses due to this pest planted fields to non-host crops. The acreage of non-host crops, including corn and wheat, has increased in some areas of Missouri and Kentucky.

Early in the year, adjustments were made in the regulated area of Missouri. The entire counties of Dunklin and Pemiscot were placed under regulation. In New Madrid County the regulated boundary was extended to include infestations that were individually regulated. The infested farms in Mississippi, Scott, and Stoddard Counties continue under the premise regulation. There was no change in the regulated areas of Kentucky. In Pulaski County, Illinois, three additional farms were placed under regulation.



Good stand of corn growing in a field where soybeans were almost a complete loss in 1959. Pemiscot County, Mo. 1962.

Regulatory activities consisted of the certification of equipment and commodities moving out of the regulated area. Cleaning and treatment involved a wide variety of things, such as: farm equipment, road and construction machinery, sugar beets, soybean trash, gin trash, used bags, wheat screenings, cotton pickers, cotton seed, etc. More than 50,000 bushels of soybean seed were certified as part of the regulatory program.

Certified tomato transplants were moved from the regulated area in Tennessee to points in Indiana and Wisconsin. This operation followed the intensive surveys of the growing locations and adjacent areas, with negative results. In Ballard County, Kentucky, a thorough sampling of land to be used for growing transplants for the northern market was approved following negative survey results.

Under a dealer-carrier agreement, 305,600 pounds of snap beans were allowed to move from growers in the regulated area in Missouri to the Green Giant Canning Company, Beaver Dam, Wisconsin. All precautionary cleaning and treatment measures were taken at origin and destination to preclude any danger of spread. Excellent cooperation was received from all participants in this operation.

Accomplishments, Soybean Cyst Nematode Control - Fiscal Year 1962

State	Properties Surveyed	Acres Surveyed	No. of Infested Props.	No. of Infested Acres	Commodities Treated: Fumigated	Commodities Treated: Other
Illinois	2,133	87,513	5	155	1	6
Indiana	2,067	70,305	-	-	-	-
Iowa	538	14,141	-	-	-	-
Kansas	120	2,591	-	-	-	-
Kentucky	741	42,398	8	687	20	174
Minnesota	330	8,361	-	-	-	-
Missouri	2,168	167,228	120	4,705	41	377
North Dakota	9	265	-	-	-	-
Ohio	1	18	-	-	-	-
South Dakota	60	1,136	-	-	-	-
Wisconsin	28	503	-	-	-	-
Totals	8,195	394,459	133	5,547	62	557

Soybean Cyst Nematode Infestations - Cumulative Through June 30, 1962

State	County	No. of Properties Infested	Acres Infested	Commodities Treated: Fumigated	Commodities Treated: Other
Illinois				1	6
	Pulaski	6	175		
Kentucky				111	372
	Ballard	2	75		
	Fulton	47	3,910		
Missouri				113	561
	Dunklin	63	2,541		
	Mississippi	6	278		
	New Madrid	68	2,753		
	Pemiscot	258	10,696		
	Scott	3	180		
	Stoddard	5	376		
Totals		458	20,984	225	939

WHITE-FRINGED BEETLE

White-fringed beetle was first detected in the Central Region at Fulton (Fulton County), Kentucky, on September 23, 1960.

In August 1961, several of the Kentucky, Illinois, and Missouri Plant Pest Control and State personnel received training in white-fringed beetle survey at Dyersburg, Tennessee, in the Southern Region. Upon their return, surveys of suspect properties were made in 3 counties in Illinois, 17 counties in Kentucky, and 23 in Missouri. All results were negative. Surveys will be continued in these three states during the appropriate seasons.

Accomplishments - Fiscal Year 1962

State	Number of Counties	No. of Properties Surveyed	No. of Properties Infested	No. of Acres Infested	No. Acres Ground-treated
Illinois	3	839	0	0	0
Kentucky	17	2,721	0	0	0
Missouri	23	434	0	0	0
Totals	43	3,994	0	0	0

ASSOCIATED ACTIVITIES

More emphasis was placed on program services this year. Through the facilities of the Extension Service news media, many articles appeared in local publications. This was particularly true of the stories concerning the Japanese beetle programs. Program information was also disseminated through facilities of the Division and the various cooperating agencies via radio, television, exhibits, and demonstrations. Commemorating the centennial of the Department of Agriculture, several of the Division's exhibits were placed in public buildings, industrial sites, and at science meetings.

Division and cooperating personnel discussed program activities formally and informally at farm- and civic group meetings, crop shows, fairs, and science classes in colleges and high schools. Supplementing the discussions, appropriate slides and films were used.

Informational materials, including circular letters, pamphlets, bulletins, and special material, were given wide distribution. Slides and films were made available to education and civic groups. Posters and charts were prominently displayed to tell the Division's program story to the general public. During the year, a total of 60,275 pieces of informational material was distributed in the Central Region.

Summary of Associated Activities - Fiscal Year 1962*

State	Public Meetings Attended	Presentations					Feature & News Stories	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bulletins	Circulars	Infes. & Posters	Maps
Illinois	3	7	-	5	-	5	5	3	-	311	2	5,612
Indiana	1	19	-	17	-	1	-	-	-	84	-	94
Iowa	5	5	2	18	12	12	50	1	400	5,000	50	1,397
Kansas	3	58	2	14	1	-	12	2	220	3,070	270	220
Kentucky	15	31	10	8	25	5	35	0	2,800	2,500	0	0
Michigan	4	83	82	50	2	-	2	-	1,350	700	-	44,700**
Minnesota	101	101	96	24	29	-	-	8	623	5,612	308	241
Missouri	20	18	9	8	30	-	60	2	85	4,545	510	1,122
Nebraska	25	16	7	21	-	-	16	2	3,435	505	265	-
North Dakota	20	14	18	4	5	5	15	7	100	800	350	-
Ohio	32	62	26	155	5	35	47	6	8,750	7,500	5,500	700
South Dakota	27	24	22	4	20	20	25	1	75	1,500	1,600	-
Wisconsin	4	18	1	16	73	3	10	-	800	415	240	140
Totals	260	456	275	344	202	86	277	32	18,638	32,542	9,095	54,226

*Includes State and Federal activities for all programs of the Central Region.
**Includes reports issued by State Department of Agriculture relative to PPC programs.

(*---*)

P L A N T P E S T C O N T R O L

COOPERATIVE PROGRAMS

EASTERN REGION

FISCAL YEAR

1962

December 1962
Moorestown, New Jersey

U. S. Department of Agriculture
Agricultural Research Service
Plant Pest Control Division

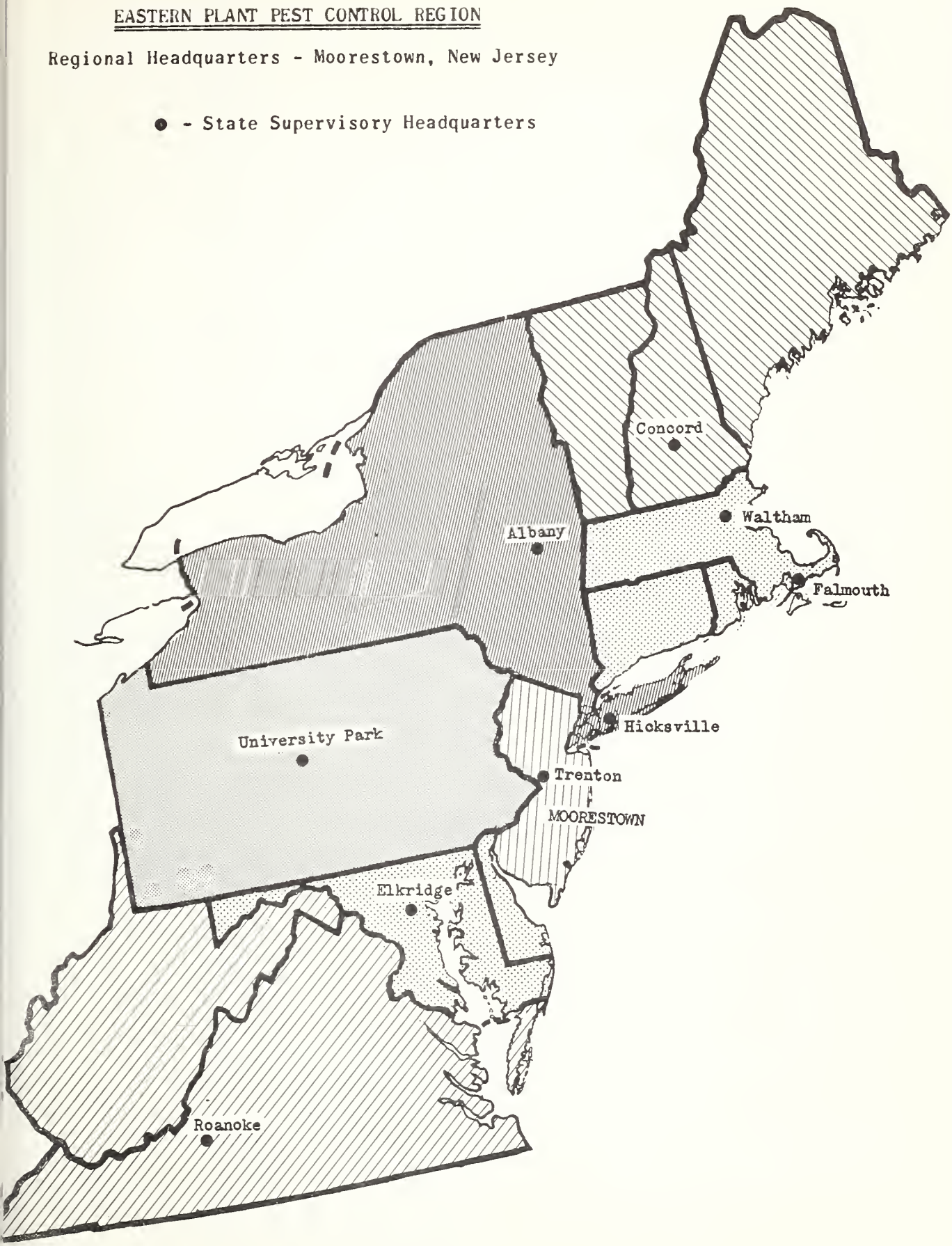
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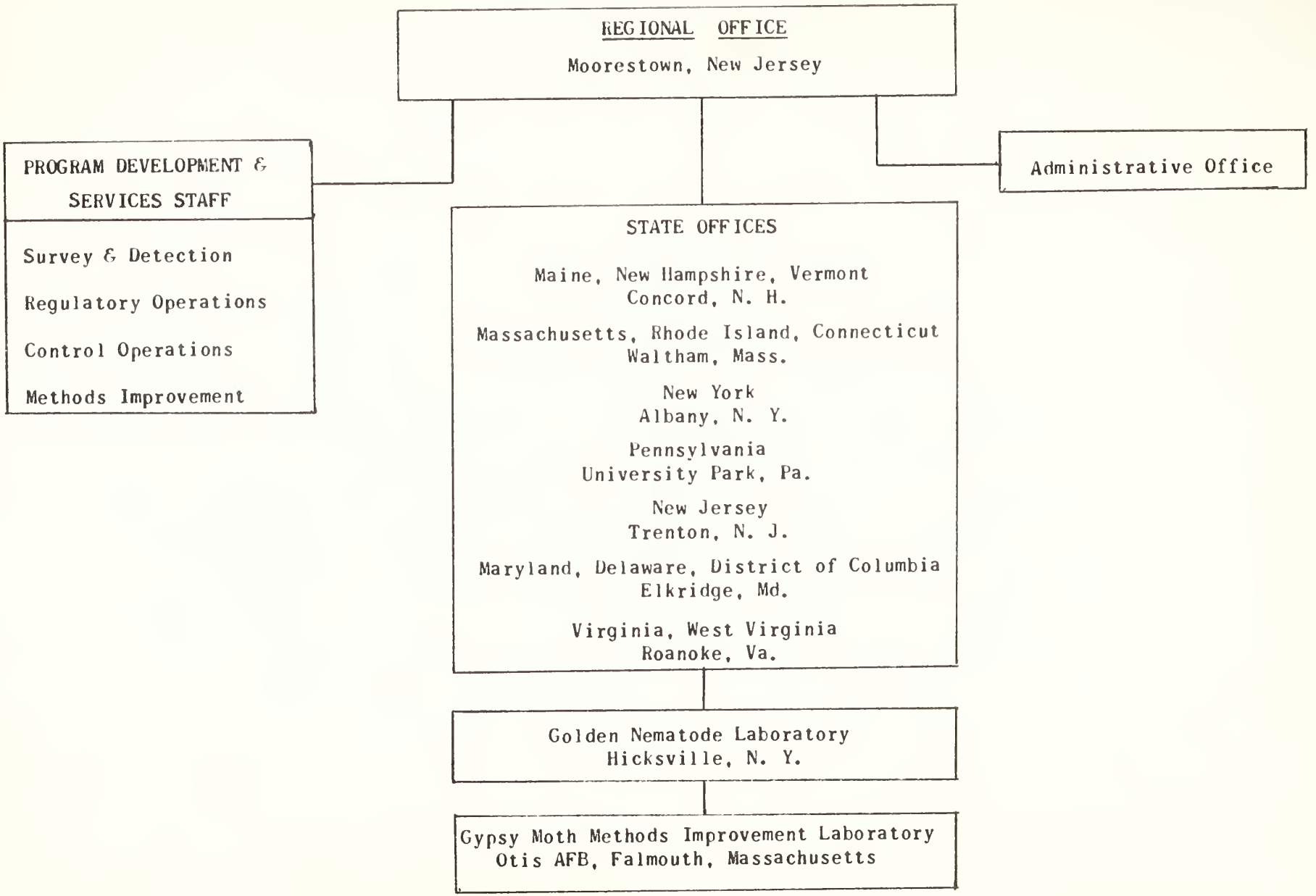
EASTERN PLANT PEST CONTROL REGION

Regional Headquarters - Moorestown, New Jersey

● - State Supervisory Headquarters



EASTERN PLANT PEST CONTROL REGION



SUMMARY OF ASSOCIATED ACTIVITIES

Fiscal Year 1962

Program	Number Persons Attending	Public Meetings Attended	Presentations: Talks	Slides	Films	Radio	TV	Feature & News Stories	Extent Used: Exhibits	Bllt'n & Circlrs	Infest Maps & Posters	Spcl. Rpts.
Barberry	212,944	24	23	21	15		1	10	1	3,881	2	4,100
Brown-Tail Moth										9		
C. E. I. S.*	15,227	24	55	44	10	2	2		6	1,172	15	911
European Chafer	905,562	18	21	21	2		1		4	16,610		
Golden Nematode	40,013	19	21	18	3				3	1,720	3	
Gypsy Moth	653,990	87	34	28	46	35	11	149	11	16,935	4,271	
Imported Fire Ant	2,193	18	21	21	2					39		
Japanese Beetle	1,327,392	32	32	32	48	4	2	5	13	24,023	1,022	
Khapra Beetle	1,763	18	18	19						175		
Soybean Cyst Nematode										567		
White-Fringed Beetle										212		
Witchweed	61,997	20	21	20	42		41			722		
Totals	3,221,081	260	246	224	168	41	58	164	38	66,065	5,313	5,011

*Includes meetings where PPC in general was discussed.

BARBERRY ERADICATION

Inspections of barberry plants in nurseries to ascertain eligibility for interstate trade were made in ten states and involved a total of 149 establishments. Regulatory visits were also made to 27 dealers in the District of Columbia, Delaware, Maryland, New Jersey, New York, Pennsylvania and Virginia. Specially trained personnel of this Region made these inspections, and during the season they trained inspectors who next year will integrate all of this work with their other duties. A summary of the firms authorized to ship approved rust-resistant plants interstate until September 1962 is included below.

There was continued cooperation with the Postentry Branch of Plant Quarantine Division in determining that barberry plants in postentry status were true-to-type. On the basis of this determination, such plants were released by Plant Quarantine for interstate shipment.

Stem rust infection on small grains in the Virginias was reported to be light. In Pennsylvania, stem rust losses were estimated as: wheat, .25; oats, trace; barley, trace; and rye, trace.

The cooperative Federal-State eradication program was continued in Pennsylvania, Virginia and West Virginia under work plans similar to those of recent years. A summary of the areas worked, properties found infested and barberry bushes removed this year, and information about present status and future requirements are included in accompanying tables. Methods improvement section conducted herbicide tests in plots in these states.

ESTABLISHMENTS AUTHORIZED TO MOVE RUST-RESISTANT MAHONIA-BARBERRY INTERSTATE UNTIL SEPTEMBER 1962

State	Firms	State	Firms
Connecticut	9	New York	31
Delaware	9	Pennsylvania	33
District of Columbia	3	Rhode Island	5
Maryland	14	Virginia	22
Massachusetts	9	West Virginia	4
New Jersey	37		

PRESENT STATUS, PROGRESS and FUTURE REQUIREMENTS

1934 - 1962

State	SQUARE MILES						PROPERTIES			
	Total in State to Be Worked	Number Covered		Number Requiring Work One or More Times		Number Requiring No Future Work	Total Found To Date	Number Needing One or More Reinspections	Number Completed	Barberry Bushes Destroyed To Date
		Initial Work	Rework	Initial	Rework					
Penna.	30,412	25,192	8,623	5,220	4,765	20,427	12,939	11,852	1,087	15,572,505
Va.	12,535	11,521	4,585	1,014	967	10,554	5,100	3,256	1,844	237,939,238
W. Va.	5,721	5,590	2,090	131	529	5,061	2,321	2,058	263	184,245,229
TOTALS	48,668	42,303	15,298	6,365	6,261	36,042	20,360	17,166	3,194	437,756,972

BARBERRY ERADICATION ACCOMPLISHMENTS

Fiscal Year 1962

State	Square Miles Worked		Properties Found Infested		Old Properties Inspected	Barberry Bushes Destroyed	
	Initial	Rework	New	Old		Common	Native
Pa.	1,693	699	292	567	1,674	56,405	
Va.	5	73	19	232	314		5,328,400
W. Va.	2	50	18	72	130	70	1,258,100
TOTALS	1,700	822	329	871	2,118	56,475	6,586,500

COOPERATIVE ECONOMIC INSECT SURVEY

Close contact was maintained with the survey coordinators in all states and in some, special workshops were held to encourage greater participation in the cooperative survey program. The amount of observations for insect pests and reports through respective states continued to increase. Also, there was an improvement in the reports received from the cooperating State officials both in relation to the agreed upon format and as it relates to giving more attention to detection and the continuity of reporting.

Preparation of lists was initiated in some states of pests in the Insects Not Known to Occur series that should be given special consideration in the respective work areas. More specimens were obtained for addition to insect collections including some of the more important foreign species for which we wish to be on the alert. Special surveys conducted include the black light trapping for the winter moth in coastal areas of Maine and New Hampshire. Insects trapped were submitted to the respective states for initial screening prior to being forwarded to Washington for determination. No winter moths were recovered in this survey.

A fruit fly detection program involving the use of two types of traps and multipurpose lures was conducted in practically all states within the Region. Final determination of collected material was made in Washington. No species not previously known to occur in the United States were trapped; however, in a few instances species with only a limited number of previous records were taken.

Black light traps were operated in seven Eastern Region states. Varying arrangements were made as to the method of handling the collected material and as to the intensity of surveys conducted. A plan was initiated on a trial basis wherein the collected material was submitted to an employee especially assigned to handling the collections. Arrangements were made to prepare a lot of each of the differently appearing specimens encountered so that this limited number of specimens in proper condition for identification could be forwarded to representatives within the state for identification. Specimens previously collected were not submitted from material collected on subsequent trapping dates.

EUROPEAN CHAFER

Effective June 12, 1962, changes were made in the Federal regulated areas in New York as shown below: (1) Extensions in Chemung, Erie and Niagara Counties; (2) The town of Minetto, Oswego County, was removed from regulation after a five-year negative survey period following application of eradication treatments.

Surveys were conducted in ten states and the District of Columbia. Concentrated trap and visual survey and grub surveys were with negative results in Hadley, Massachusetts, where an infestation had been reported. See Table II of the Appendix for statistical summary of survey operations.

Surface soil treatments with residual insecticides were applied to a small area in Meriden, Connecticut, and to more than 1,400 acres in the New York Harbor and Newark Airport sections of New Jersey.

As shown in Table I of the Appendix, 54 establishments had regulatory services. Twenty-seven of these required combination European chafer-Japanese beetle quarantine certification for shipments of regulated articles. All of these establishments are located in New York, except two in Connecticut.

Preliminary laboratory and field tests were undertaken to compare the effectiveness of Sevin, chlordane and DDT as a residual spray for European chafer adults. Sevin substantially out-performed the other two insecticides and will be field tested on a larger scale next year.

GOLDEN NEMATODE

More than 40,000 soil samples were collected from selected potato fields and grading stations in a total of seven states. Most samples were taken on Long Island, New York, where the only known infestations of the golden nematode in the United States exist, and where approximately one-third of the commercial potato acreage is surveyed each year.

Survey results were negative in all areas except Suffolk County, Long Island, where two additional properties totalling 123 acres were found infested. Since the beginning of the golden nematode program, more than 15,000 infested acres have been recorded on Long Island. At present, however, less than one-fourth of this infested acreage remains available for agriculture. This reduction is attributed to real estate development and to cooperative golden nematode eradication measures.

Since the initiation of the eradication program on Long Island in 1960, a total of 30 properties representing 1,739 acres has been soil fumigated. Sixteen of these properties, located in Nassau and Suffolk Counties, totalling 1,164 acres were treated during the current year. Improvements in the soil fumigation machinery and equipment described in the Methods Improvement Section facilitated operations. Six tractor-drawn shank-type applicator units were used to inject the soil fumigant, dichloropropane-dichloropropene, to a depth of six to eight inches, at the rate of 90 gallons per acre. Two applications of 45 gallons each were made approximately ten days apart, with the turning of soil in between. The latter operation, plus the initial preparation of land for fumigation, was accomplished by affected property owners or operators. Vapam was applied as a drench to headlands, farm yards and farm roads bordering treated fields in order to preclude possible reinfestation.

About a month after these treatments were applied, a total of more than 4,100 soil samples was taken from the 16 treated properties. Sample processing and examination of all recovered golden nematode cysts disclosed only one viable cyst. As a result, approximately ten acres on the single property involved will be retreated. All other treated fields were released for potato or other crop production.

Post-crop soil surveys were made on properties treated in 1960 and planted to potatoes in the spring of 1961. Processing of the resulting soil samples showed that treatment was effective on all properties except one from which three viable cysts were recovered. This will require retreatment of a fifteen-acre field.

The Division continued to cooperate with the New York State Department of Agriculture and Markets in the enforcement of State quarantine regulations.

GYPSY MOTH

Extensive surveys were made in Pennsylvania, New York, Northern New England and New Jersey. More limited survey was done in six other states. A total of approximately 44,000 traps was used in this Region. All of these traps were the new Johnson type. Synthetic gyplure was used as the attractant. Refer to Table II, Appendix, for a summary of these survey activities.

A total of more than 400,000 acres was treated in the eradication-control-suppression operations in seven states. DDT was used in all of these treatments except for approximately 30,000 acres which were sprayed with Sevin. Almost 26,000 of the acreage treated with Sevin is located in New York. The accompanying table summarizes this operation by states.

Gypsy moth defoliation was noted on more than 300,000 acres in six states as compared with approximately 49,000 acres in 1960. A summary of the acres defoliated by state is included in an accompanying table.

The International Girl Scout Roundup campsite at Ferrisburg, Vermont, was treated with a State-Federal spray application to eliminate any gypsy moth infestation so that regulated articles moved therefrom during the Roundup would be eligible to move under a special certificate of exemption to be issued to the camp management in accordance with terms of a dealer-carrier agreement.

Regulatory service was given to approximately 1,800 establishments, 245 of which needed Japanese beetle-gypsy moth certification for shipment beyond regulated areas. Special efforts were continued to inform the general public about regulatory requirements applying to the movement of regulated articles by individuals. A new poster illustrating the regulated area and colored egg cluster was prepared and used effectively for this purpose.

Effective January 1962 the issuance of duplicate Plant Pest Control certificates covering shipments of certain regulated articles to Canada, and Plant Pest Control certificates of origin for products moving from non-regulated section of quarantined states to Canada were discontinued. Plant Pest officials of the states concerned arranged to issue State certificates of origin for such shipments.

A special section in the Appendix summarizes highlights of the Methods Improvement work at the Plant Pest Control laboratory officially opened this year at Otis Air Force Base, Falmouth, Massachusetts.

GYPSY MOTH CONTROL PROGRAM - 1962

Eradication - Control - Suppression

Acreage Treated

(all DDT except as noted)

State	Federal Contract		State Contract		TOTAL
	Aircraft	Ground Equip.	Aircraft	Ground Equip.	
Conn.	----	---	55,280	---	55,280
Maine	38,965	---	2,380	---	41,345
Mass.	----	---	60,000 2/	---	60,000
N. H.	----	---	----	---	----
N. J.	33,981	---	----	---	33,981
N. Y.	25,760 1/	1,111	145,198 3/	821	172,890
Penna.	13,056	---	49,665	---	62,721
R. I.	----	---	----	22,255	22,255
Vt.	----	---	----	---	----
	111,762	1,111	312,523	23,076	448,472

1/ All Sevin

2/ 4,000 Acres Sevin

3/ 360 Acres Sevin
100 Acres B/T

GYPSY MOTH DEFOLIATION - 1962

State	Acres Defoliated
Connecticut	83,290
Maine	3,998
Massachusetts	150,000
New Hampshire	3,390
New York	61,342
Rhode Island	----
Vermont	6,292
TOTAL	308,312

JAPANESE BEETLE

Effective April 26, 1962, the entire States of Virginia and West Virginia were placed under Federal quarantine regulation. Consideration is being given to placing all of New York and New Hampshire under regulation, and to extending the regulated area to additional parts of Vermont and Maine.

During the 1961 adult beetle season, the Philadelphia International Airport was the only non-military field declared hazardous. Aircraft disinsectization treatments were applied there to planes used in 376 flights to non-regulated areas. Because of "touch-down" flights there and at Cleveland, aircraft disinsectization treatments were necessary at the flight origin fields listed and to the number of flights indicated: Friendship, Baltimore, Maryland 12; Newark, Newark, New Jersey 203; Greater Pittsburgh, Pittsburgh, Pennsylvania 43; Logan, Boston, Massachusetts 140; Bradley, Springfield, Massachusetts 20; National, Washington, D. C. 112; Hancock, Syracuse, New York 10; Buffalo, Buffalo, New York 28; Idlewild, New York 194; and LaGuardia, New York 112. Air Force fields at McGuire (New Jersey), Stewart (New York) and Otis (Massachusetts) were also declared hazardous, as were the Naval airports at Willow Grove, Pennsylvania, and New York City. Sixteen hundred of the estimated 1800 treatments to military planes were applied at the McGuire Air Base.

A total of approximately 3,000 DDT dry aerosol disinsectization treatments was applied to the military and non-military planes involved. This method, considered to be much more practical than the liquid DDT aerosol used previously, was carried on without recorded official criticism.

In an effort to reduce the beetle populations at airports, soil treatments with residual insecticides were continued this year on a cooperative basis. By June 1962, the total of all such treatments applied previously and this year to 17 airfields in the District of Columbia, Massachusetts, Maryland, New Jersey, New York, Pennsylvania and Virginia approximated 13,000 acres.

Regulatory services associated with the movement of farm products during the adult beetle season were limited to three counties in southwestern Virginia, and involved shipments of green beans and cabbage, largely to adjacent non-regulated Tennessee, valued at approximately $200,000.

Throughout the year, certification services were required at approximately 1,000 establishments shipping plants or soil. Two hundred fifty of these had combination Japanese beetle-gypsy moth certification; and 30 others required Japanese beetle-European chafer regulatory services, as indicated in Table I of the Appendix.

SOYBEAN CYST NEMATODE

Virginia

Cooperative State-Federal soil sampling surveys were continued during the fiscal year in the counties of Isle of Wight, Nansemond and Southampton, in which infestation had been found previously. In these three counties, 24,718 soil samples were collected on 574 properties involving a total of 17,900 acres. Samples were processed at the Franklin, Virginia, storehouse and infestation was found on 32 additional properties: 1 in Isle of Wight County and 31 in Nansemond County. Samples from Southampton County were negative.

Symptom surveys were carried on in twelve other soybean producing counties in the eastern section of the State. In the symptom surveys, 350 samples were collected on 158 properties. These proved to be negative.

Regulatory measures were enforced in connection with 278 properties currently under State and/or Federal regulations. During the fiscal year, more than 6,800 lots of miscellaneous machinery and other regulated materials were certified for movement from regulated properties. Recommendations have been made to extend the quarantine regulated areas to additional parts of the Isle of Wight and Nansemond Counties in Virginia.

* * *

Negative surveys were conducted in four other states. Table II of the Appendix summarizes soybean cyst survey activities.

KHAPRA BEETLE

More than 500 properties in eleven states and the District of Columbia were surveyed for khapra beetle, all with negative results. In August 1961, Plant Quarantine Division at Buffalo, New York, advised us that khapra beetle had been confirmed on ship's stores from a vessel at Cleveland, Ohio. This ship had unloaded tapioca flour for a paper company at Erie, Pennsylvania. This was promptly investigated, and inspection at the paper plant, warehouse and docks was negative.

SWEETPOTATO WEEVIL

A first-record collection of this insect was made in Gloucester County by an entomologist of the New Jersey Division of Plant Industry in May 1962. Specimens were taken from Centennial sweetpotatoes imported from a southern state. Plant Pest Control cooperated with the New Jersey Department of Agriculture in application of eradication treatments to tubers, soil in planted beds and to exposed stored market potatoes.

WHITE-FRINGED BEETLE

Surveys with negative results were made in six states, including New Jersey, where a localized infestation had been eradicated, and in eastern Virginia where an incipient infestation was discovered in the fall of 1960.

WITCHWEED

Limited detection observations, mostly incidental to other activities, were made in eleven states, with negative results.

METHODS IMPROVEMENT

Gypsy Moth

In January of this year the Division officially took possession of its new Gypsy Moth Methods Improvement Laboratory at Otis Air Force Base.

Aerial test sprays involving Sevin and Phosphamidon were evaluated. Sevin-water sprays were most effective with emulsifiable tung oil as a sticker. Phosphamidon, with or without surfactant, failed to provide adequate control. Subsequent laboratory investigations and small-scale field tests indicated that Sevin sprays with certain synthetic latex emulsion stickers were superior to those containing tung oil. Accordingly, Sevin sprays in combination with the most promising of these new stickers were applied by air to twelve 44-acre plots in York County, Maine. Zectran insecticide was applied to an additional two plots. Evaluation of these aerial sprays are in progress.

There was a cooperative field test involving aerial application of Bacillus thuringiensis, in both water and oil sprays, some of which were fortified with the polyhedral virus. Numerous formulation and dispersal problems were encountered. Gyplure was applied by air in granular and oil formulations to an isolated 400-acre infestation in an effort to reduce gypsy moth populations by altering the sex behavior of male moths. Further tests with gyplure in combination with the adhesive tanglefoot were conducted to determine the feasibility of annihilating male moths in areas of isolated infestation.

Experimental trap lines were established to: determine optimum trap placement; compare several candidate adhesives against tanglefoot; determine the necessity and frequency of tanglefoot combing; check the influence of wick composition, humectants, concentration, and aging on gyplure; compare clear plastic traps with the standard, and a trap toxicant, DDVP in Montan wax, with tanglefoot; and, determine the value of saturation trapping for pinpointing egg mass infestation. All gyplure supplies for the year's regular and experimental trapping programs were bio-assayed in advance using laboratory-reared male moths.

Brown-tail Moth

Sevin and DDT were applied by mistblowers, one pound of toxicant in two or four gallons of water per acre, for control of isolated brown-tail moth infestations. No surviving larvae were recovered within the lightly infested test plots several weeks following treatment.

* * * * * * * * *

GOLDEN NEMATODE

The eradication soil fumigation equipment was improved by equipping tractors with dual wheels, mounting two 50-gallon supply tanks, one on each side of the tractor in front of the rear wheel to replace the single tank formerly situated at the rear of the tractor, reducing the two-bar applicator unit to an eight-foot length and moving the pump-trailing wheel toward the center of the bar.

TABLE I

CERTIFICATION STATUS - ESTABLISHMENTS UNDER PPC QUARANTINE REGULATION as of JUNE 30, 1962

PROGRAM	TOTAL ESTAB-LISHMENTS SERVED	PRINCIPAL CERTIFICATION CONDITION			CERTIFICATE FORM USED						
		Not Exposed to Infestation	EXPOSED TO INFESTATION		Printed	Master (5-4)	Package (5-27)	Plates & Stamps	Sew-In (5-22)	Eyelet (5-33)	List of Certified Establish-ments
			Category 4 Handling, etc.	Authorized Treatments, inc Inspec.							
BSR	183		24	159							x
EC	27		13	14	x	x	x	x			
GM	1,517	592	162	763	x	x	x	x		x	x
JB	752	78	259	415	x	x	x	x			
SBCN	344		54	290		x					
EC-JB	27		9	18		x	x	x			
GM-JB	245	9	33	203	x	x	x	x			
TOTALS	3,095	679	554	1,862							

TABLE II

SUMMARY PROGRAM SURVEY ACTIVITIES

Program	Surveyed: States	Surveyed: Counties	Surveyed: Properties	Surveyed: Square Miles	Surveyed: Acres	Number Traps Used	Hosts Examined; Samples Collected	Positive Specimens	New Locations Specimens Found	Infested: Properties	Infested: Acres
BE	3	32	2,447	2,522			6,642,975			1,200	
EC	12*	98	47		1,388	828		962			958,460**
GM	12	181			160,582	44,089		338	266		
GN	7	65	2,730		78,847		40,696			2	123
JB	6	36			6,213	2,662		969	24		
SBCN	5	38	1,379		42,412		30,516			32	1,481
SPW	2	4	26							2	
WFB	6	49	5,253								
WW	11	145	2,408		20,868						

* includes D.of C

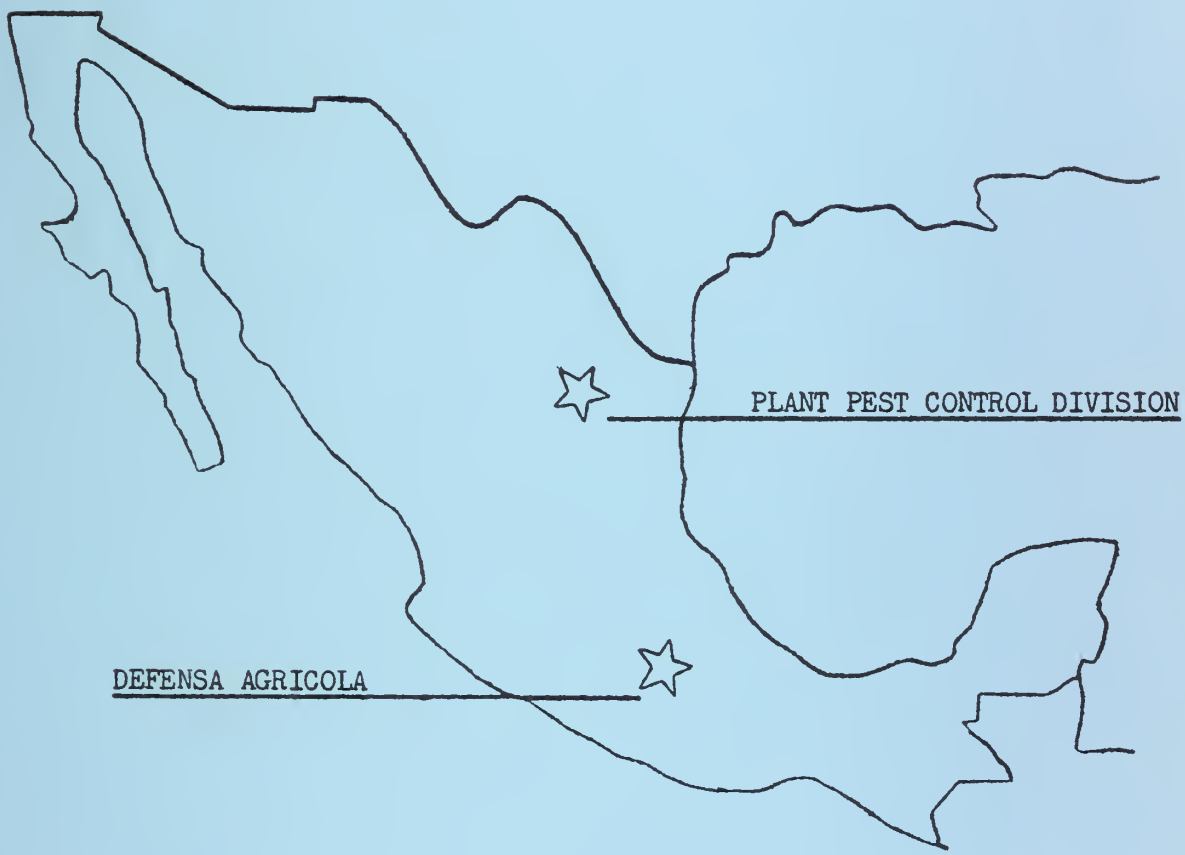
** acres for European chafer from beginning of program. Reliable figures by year not available

MEXICO REGION

PLANT PEST CONTROL DIVISION - A.R.S. - U.S.D.A.

IN COOPERATION WITH

DEFENSA AGRICOLA - S.A.G.



ANNUAL REPORT

FISCAL YEAR 1962

P L A N T P E S T C O N T R O L

C O O P E R A T I V E P R O G R A M S

M E X I C O R E G I O N

ANNUAL REPORT

F I S C A L Y E A R

1 9 6 2

United States Department of Agriculture
Agricultural Research Service
Plant Pest Control Division

PLANT PEST CONTROL COOPERATIVE PROGRAMS

In accordance with our Memorandum of Understanding with Mexico, the Plant Pest Control Division of the United States Department of Agriculture and the Defensa Agricola of the Mexico Department of Agriculture and Livestock cooperated in the preparation of work plans and the accomplishment of the Mexican Fruit Fly, Citrus Blackfly, Khapra Beetle, Mediterranean Fruit Fly, Pink Bollworm and Boll weevil programs of the Mexico Region.

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MEXICAN FRUIT FLY

The Republic of Mexico is considered to be infested generally with the Mexican fruit fly, except in Northern Sonora and Baja California which are adjacent to California and Arizona citrus producing sections in the United States.

Surveys for detection were carried on throughout the year to detect occasional incipient infestations which occurred in Baja California apparently as the result of the introduction of some contraband host material into the area,

When surveys revealed the presence of Mexican fruit fly a program of insecticide spray applications was initiated. Eradication resulted.

Quarantine inspections at strategically located points were operated in Sonora and Baja California. Volume of traffic was high and interceptions were considerable.

Commercial shipments of Mexican fruit fly hosts fruits into Northern Sonora and Baja California were large, and these were fumigated to permit their safe entry into the free areas of Northern Mexico.

MEXICAN FRUIT FLY

CONTROL ACCOMPLISHMENTS

SUMMARY F. Y. 1962

STATE	INSECTICIDE TREATMENTS		
	Number Properties Sprayed	Number Acres	Number Host Plants
Baja California	11,225	15,345	74,838
TOTAL:-	11,225	15,345	74,838

MEXICAN FRUIT FLY

SURVEY AND DETECTION

SUMMARY F. Y. 1962

STATE	NUMBER PROPERTIES SURVEYED		N U M B E R O F			NUMBER INFESTED	
	Fruit Inspection	Trapped	Traps in Use.	Trap Inspections	Positive Specimens	Properties	Acres
Baja California	42	903	1,826*	76,444	7	7	2,440
Sonora	0	17	50*	411			
TOTAL	42	920	1,876*	76,855	7	7	2,440

* Traps in use during fiscal year. 76 not reflected on Form PPC 7-27A in D. P. summary sheets June 30, 1962.

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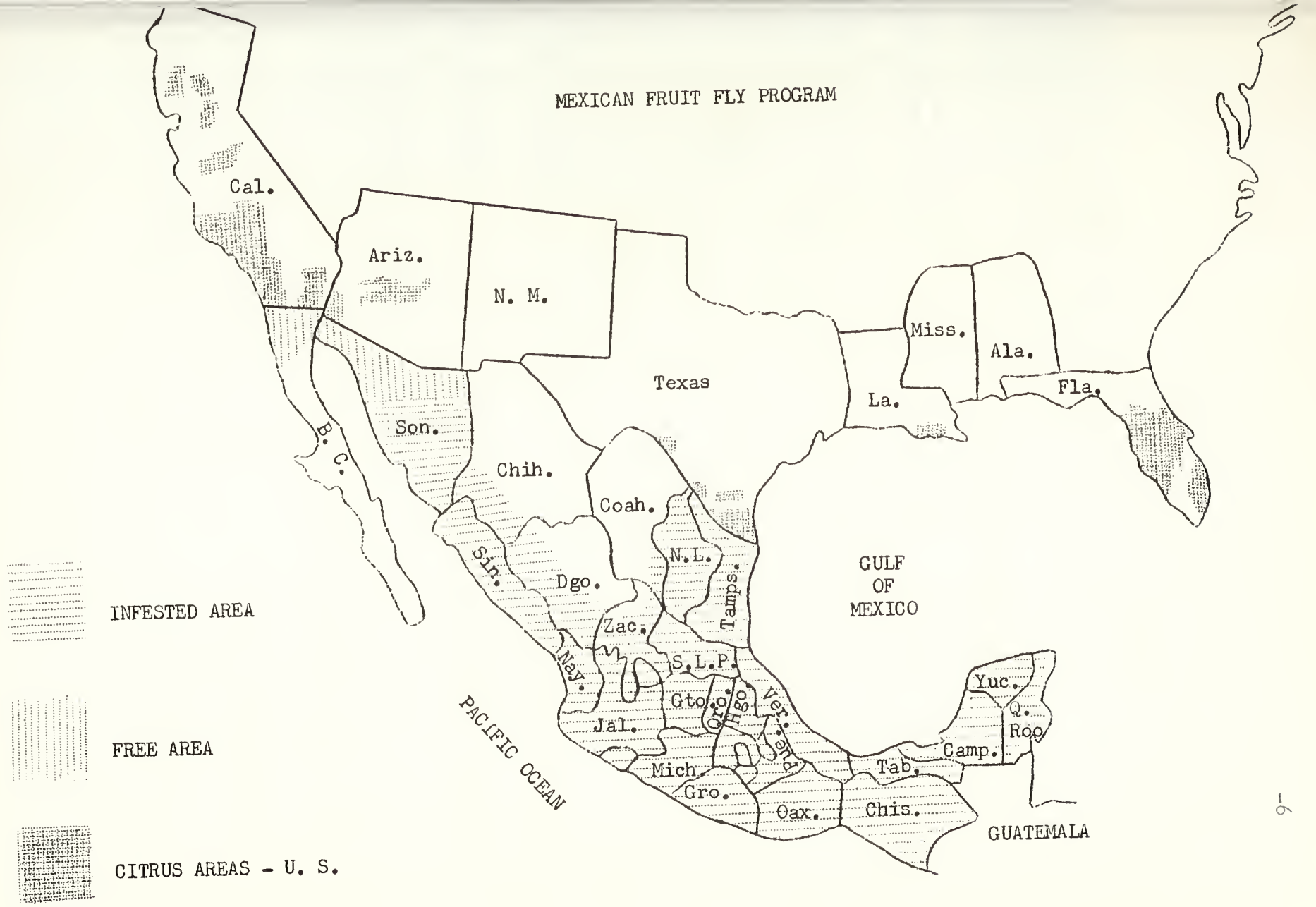
MEXICAN FRUIT FLY

REGULATORY ACTIVITY

FUMIGATION

SUMMARY F. Y. 1962

LOCATION	FRUIT FUMIGATED (BOXES)						
	Mangoes	Oranges	Sweet Limes	Plums	Grapefruit	Guavas	Total
Sonora	46,614	71,214	906	2,849	14	7,885	129,482
Baja Clifornia	2,989					116	3,105
TOTAL	49,603	71,214	906	2,849	14	8,001	132,587


MEXICAN FRUIT FLY PROGRAM
Cal.
Ariz.
N. M.
Texas
Miss.
Ala.
Fla.
La.
B. C.
Son.
Chih.
Coah.
N.L.
Tamps.
Sin.
Dgo.
Zac.
Nay.
S.L.P.
Gto.
Qro.
Hgo.
Ver.
Pue.
Jal.
Mich.
Gro.
Oax.
Chis.
Tab.
Camp.
Yuc.
Q. Roo
GULF OF MEXICO
PACIFIC OCEAN
GUATEMALA
INFESTED AREA
FREE AREA
CITRUS AREAS - U. S.

CITRUS BLACKFLY

Citrus areas bordering Texas, Arizona and California are kept free of citrus blackfly by application of insecticides to incipient infestations, found through routine survey for detection. These areas are designated as free chemical control zones. South of these free areas parasites are released to maintain commercial control and these areas are designated as biological control zones.

In the chemical control zones of the States of Baja California, Sonora and Tamaulipas no blackfly was found during the fiscal year.

In the State of Nuevo Leon, which is under chemical control, during the first half of the fiscal year infestations were being found much faster than they were being eradicated. A stepped up program of survey and eradication was inaugurated to expedite location and eradication of infestations. Sub-freezing temperatures on January 10, 11 and 12, destroyed most of the foliage on a very great many citrus trees in Nuevo Leon and also killed a large per cent of the blackfly. To take advantage of this opportunity several modifications of the original plans were made. In the infested and suspicious areas hand defoliation of the remaining green leaves was initiated where this was practicable and was carried on until April 14, when trees had put on a rather heavy new growth. Spray activities continued in progress after the freeze and at the close of the fiscal year the total of 18 spray rigs of the Defensa Agricola had been increased by 12 complete spray units of the Plant Pest Control Division. Malathion insecticide was replacedwith trithion which had been determined as being more effective. At the end of the fiscal year no live blackfly forms had been found since February 1962.

The spray program in progress is expected to be completed in late October or early November.

Infestations were generally under good control in the biological control zones. In a few locations fluctuations occurred, some of which were in areas where insecticides were used on other crops, resulting in drift to groves and killing parasites. A heavy infestation found in Campeche in 1960 was brought under commercial control in February 1962.

A new infestation was found in Simojovel, Chiapas, an area which had not been previously infested. At the close of the year the Defensa Agricola had established the parasite Prospaltella opulenta in the area.

The exportation of citrus fruit from Mexico through the United States was supervised to prevent the introduction of citrus blackfly on citrus leaves, into the United States.

CORRECTED TABLE

CITRUS BLACKFLY

CONTROL ACCOMPLISHMENTS

SUMMARY

F. Y. 1962

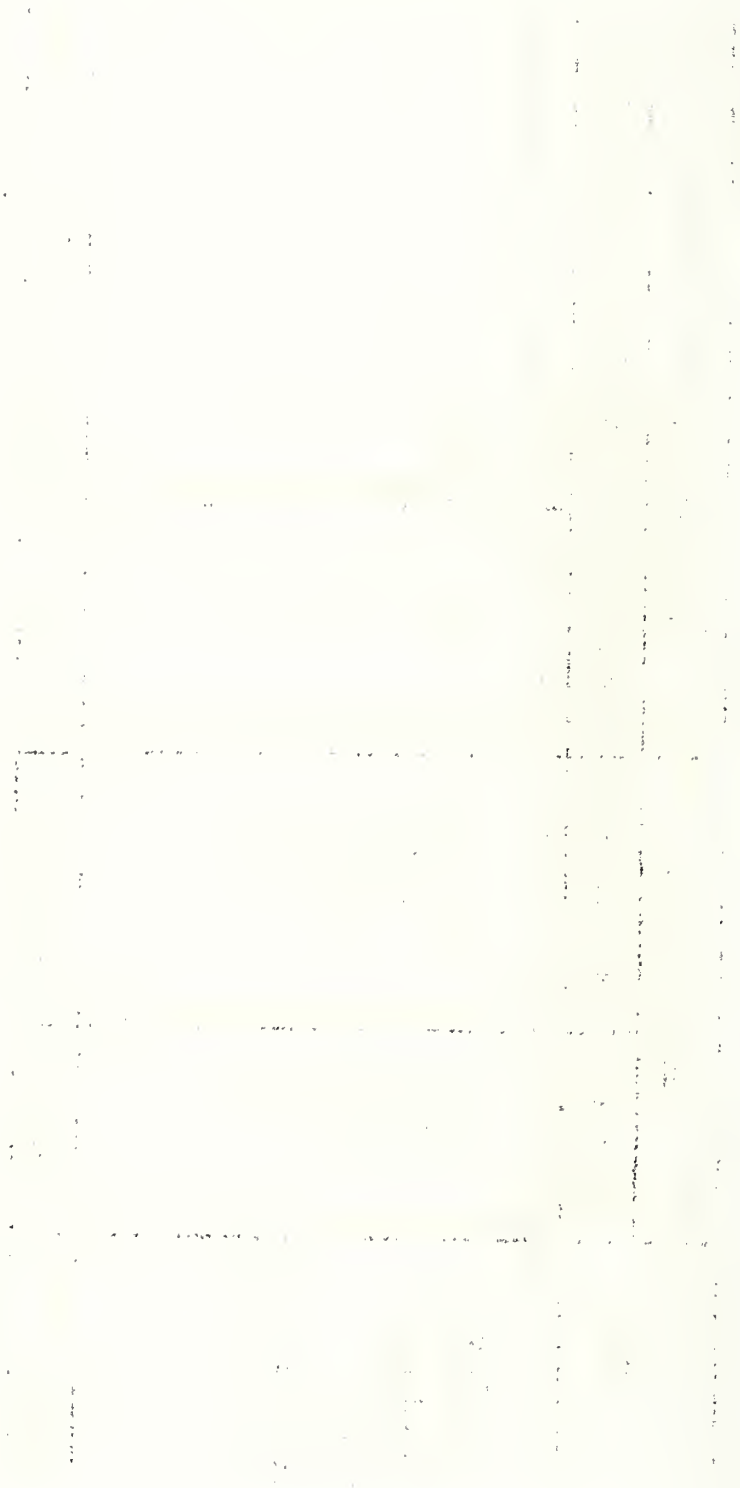
STATE	INSECTICIDE TREATMENT	
	Properties Sprayed (Ground)	Host Plant Sprayed
Nuevo Leon	1,399	343,111
TOTAL	1,399	343,111

CITRUS BLACKFLY

SURVEY AND DETECTION

SUMMARY F. Y. 1962

STATE	Number Surveyed		Number Infested	
	Properties	Host Examined	Properties	Hosts
Nuevo Leon	6,909	1,054,388	693	28,411
Tamaulipas	4,157	71,224	0	0
Sonora	5,748	173,612	0	0
Baja California	671	5,052	0	0
TOTAL	17,485	1,304,276	693	28,411

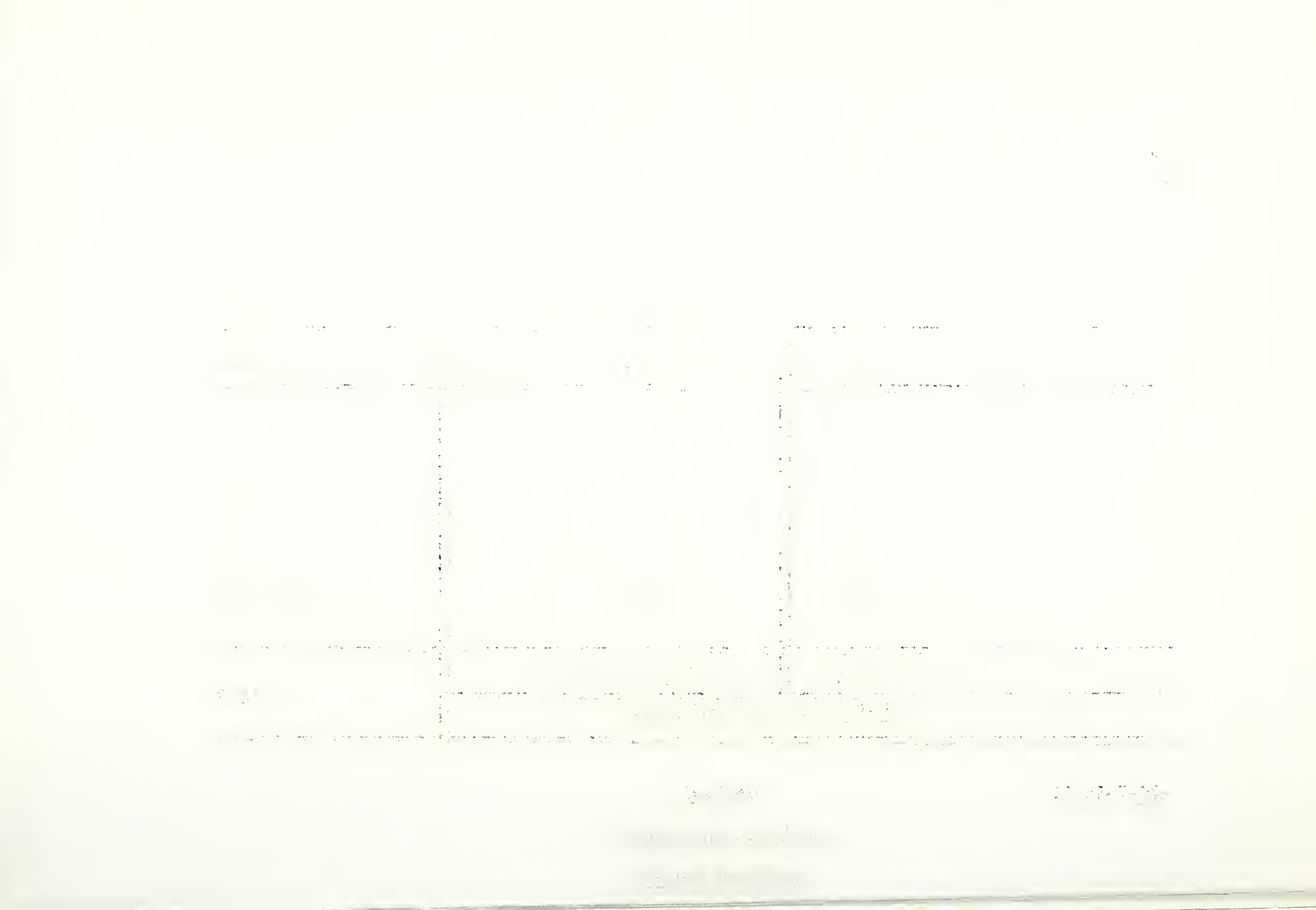


CITRUS BLACKFLY

REGULATORY ACTIVITY

SUMMARY F. Y. 1962

STATE	INSPECTION FOR CERTIFICATION	
	Processing Plants	Other
Nuevo Leon	448	896
TOTAL:-	448	896

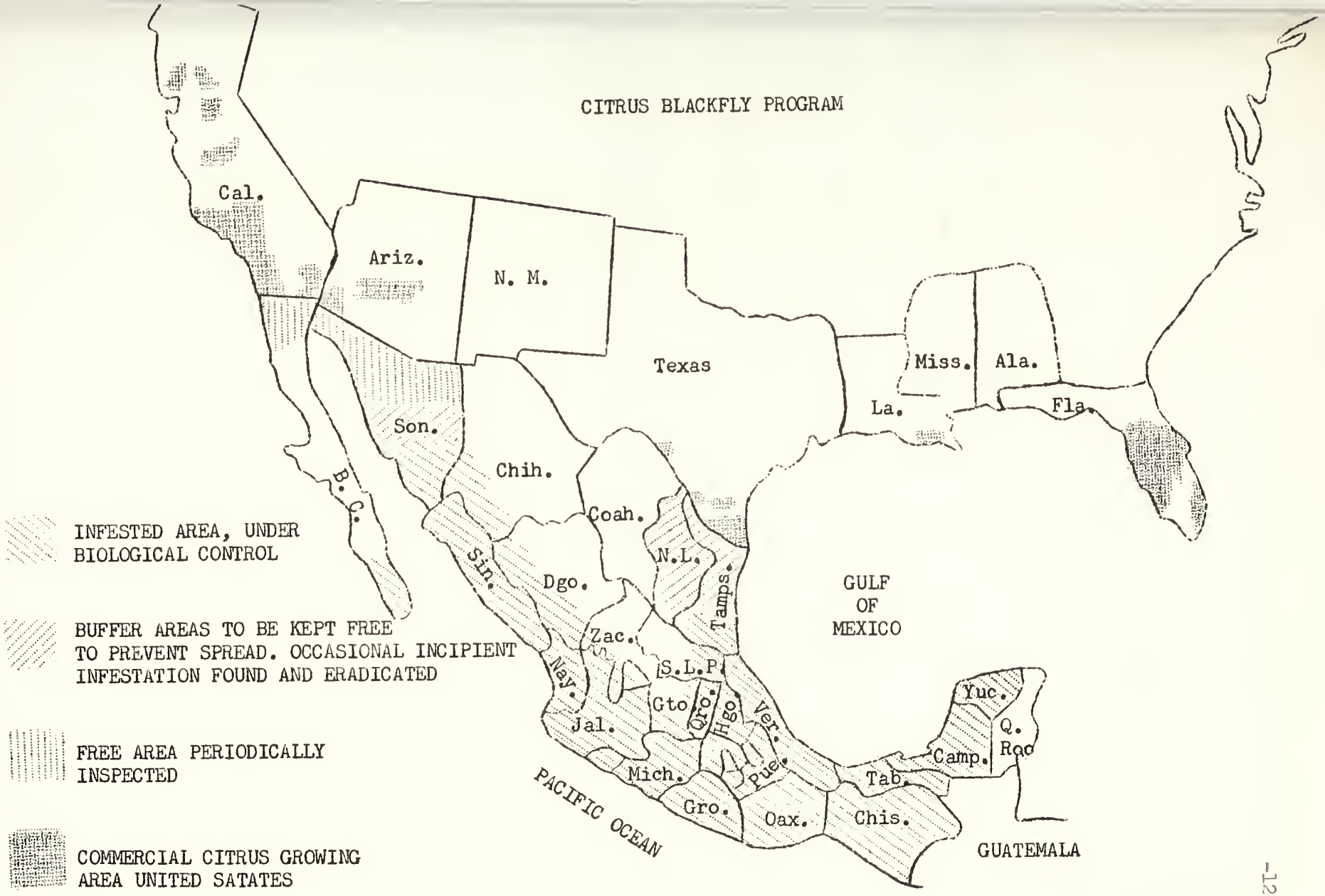


CITRUS BLACKFLY

COLONIZATION OF PARASITES

SUMMARY F. Y. 1962

STATE	PARASITES COLONIZED		
	Prospaltella opulenta	Prospaltella clypealis	Amitus hesperidum
Campeche	351,630	324,000	223,000
Jalisco	12,200		
Queretaro	10,000		
Michoacan	15,000		
Chiapas	188,990		39,360
Tabasco	13,000		
Guerrero	79,000		
Tamaulipas	61,000		
Veracruz	15,600		
TOTAL:-	746,420	324,000	262,360


CITRUS BLACKFLY PROGRAM
Cal.
Ariz.
N. M.
Texas
Miss.
Ala.
La.
Fla.
Son.
Chih.
B. C.
Coah.
N.L.
Tamps.
Sin.
Dgo.
Zac.
Nay.
S.L.P.
Gto.
Qro.
Hgo.
Ver.
Jal.
Mich.
Pue.
Tab.
Yuc.
Q. Roo
Camp.
Gro.
Oax.
Chis.
GULF OF MEXICO
PACIFIC OCEAN
GUATEMALA
INFESTED AREA, UNDER BIOLOGICAL CONTROL
BUFFER AREAS TO BE KEPT FREE TO PREVENT SPREAD. OCCASIONAL INCIPIENT INFESTATION FOUND AND ERADICATED
FREE AREA PERIODICALLY INSPECTED
COMMERCIAL CITRUS GROWING AREA UNITED SATATES

KHAPRA BEETLE

Surveys for detection of the khapra beetle were carried on throughout the year. Emphasis was given to establishments with a khapra beetle history, grain storages, and distributors. One retail establishment in the State of Sonora was found to be khapra beetle infested in July 1961. This property, together with three others in Sonora, which had been found to be infested late in Fiscal Year 1961 were given an eradication fumigation in July 1961.

In additon Plant Quarantine Division personnel found an automobile from Juarez, Chihuahua entering at El Paso, Texas, and a Rail Road Car from Mexico entering at Brownsville, Texas to be infested with khapra beetle. Both of these vehicles received a methyl bromide eradication fumigation. Surveys were made to determine if the source of these infestations might be found. The movements of these vehicles were traced and where the movements were relatedd to grain storage, inspections were made. However, results of these inspections were negative.

Regulatory activities were concerned primarily with the fumigation of used sacks in the Mexicali Valley and fumigations of sacks and bagging from the Orient arriving at the port of Ensenada, Baja California, as well as, the fumigation of wheat from the Mexicali, Baja California Valley area destined for movement south.

KHAPRA BEETLE

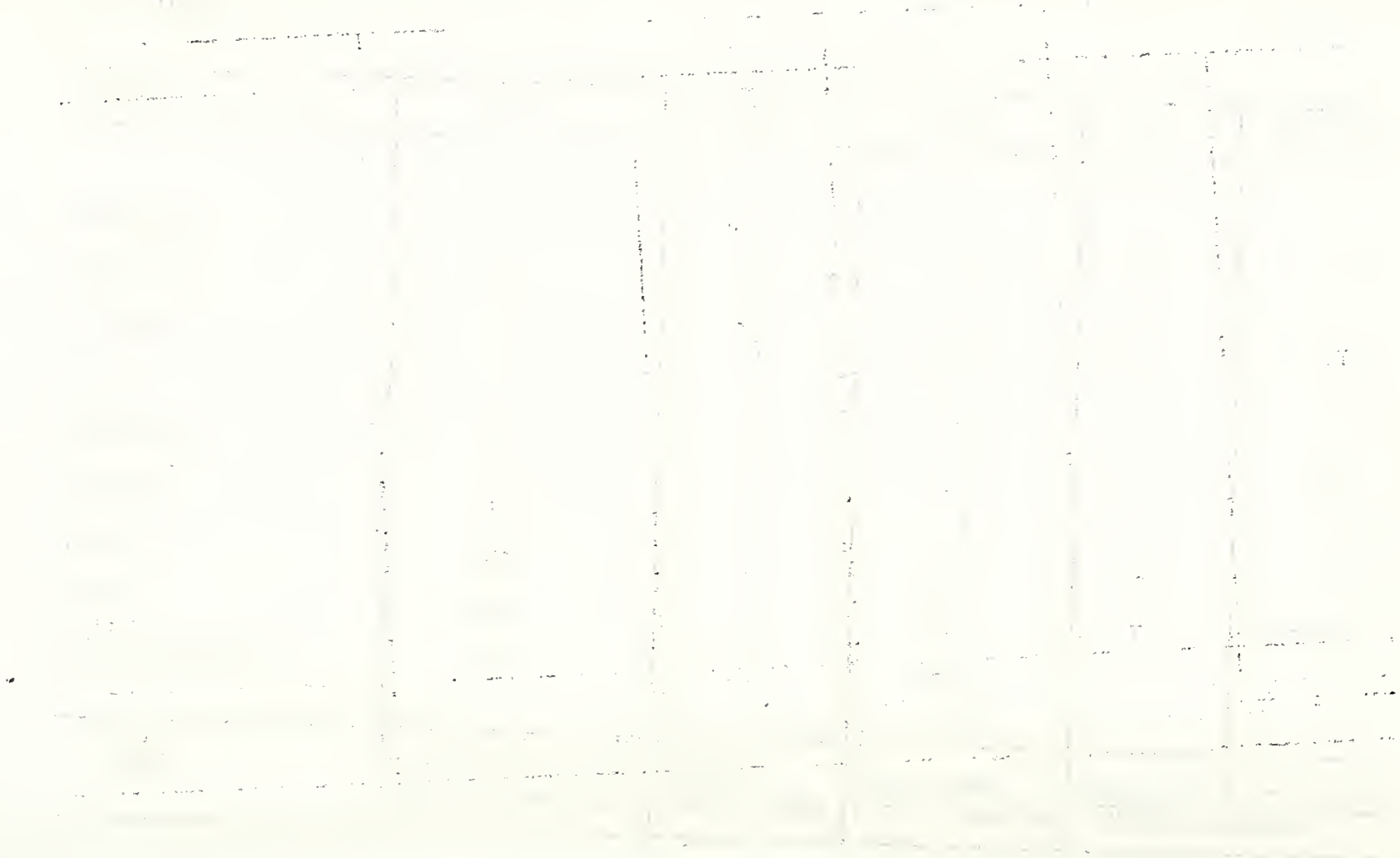
SURVEY AND DETECTION

SUMMARY

F. Y. 1962

STATE	Number Properties Surveyed	Number Traps in Use	Number Specimen Collections	NUMBER INFESTED	
				Properties	Cubic Feet
Baja California	582	17	196	0	0
Sonora	240	0	152	1	151,720
Jalisco	11	0	13	0	0
Queretaro	1*	0	1	0	0
Chihuahua	28	0	33	1	891
Durango	5	0	23	0	0
Coahuila	3	0	103	0	0
Nuevo Leon	3	0	5	0	0
Tamaulipas	1	0	0	0	0
TOTALS	874	17	526	2	152,611

* Not reported on PPC 7-27A Summary Sheet. No code for Queretaro.



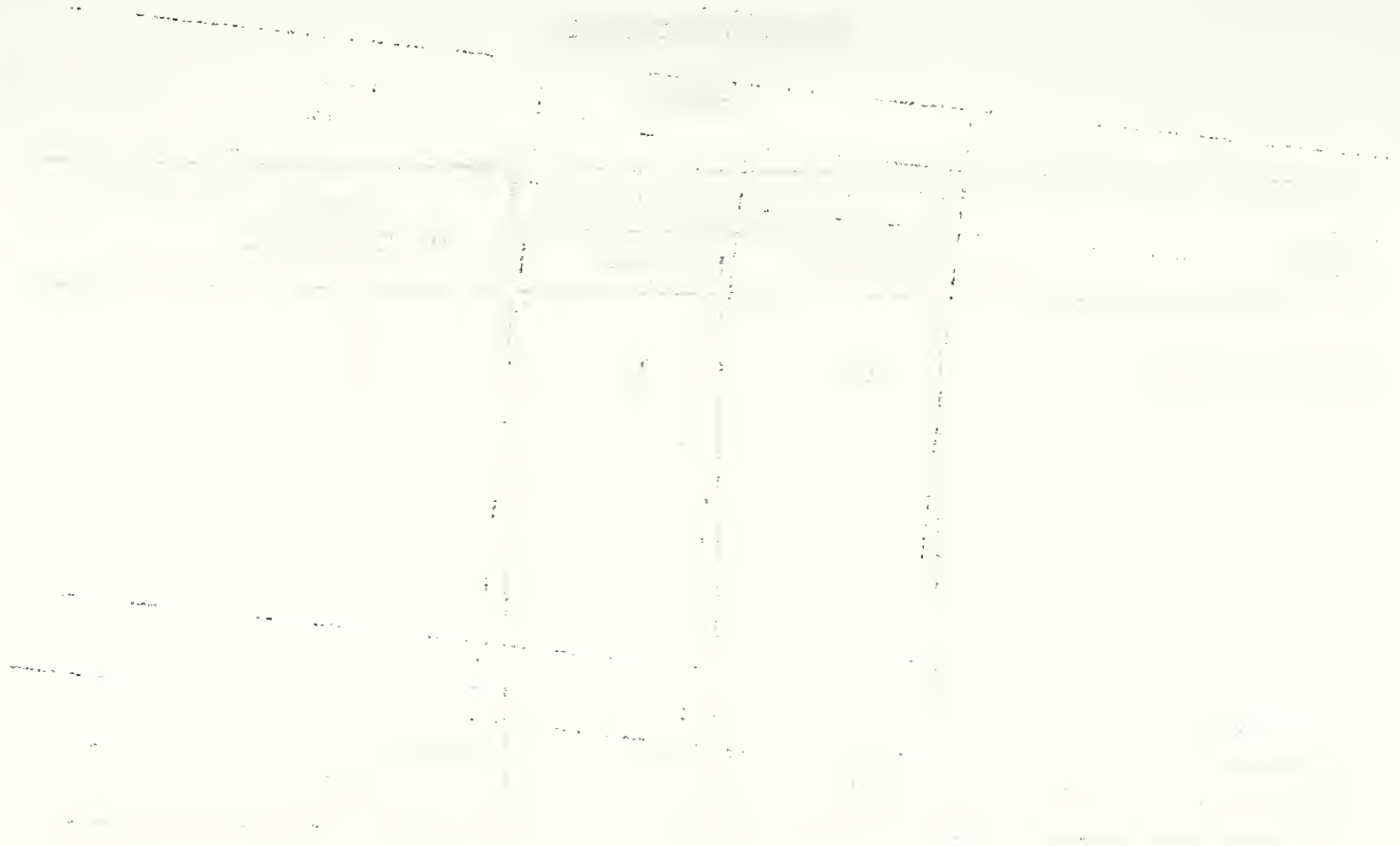
KHAPRA BEETLE

REGULATORY ACTIVITY

SUMMARY

F. Y. 1962

STATE	COMMODITY LOTS TREATED		TOTAL ALL TREATMENTS
	Fumigated	Other	
Baja California	314	13	327
TOTAL	314	13	327

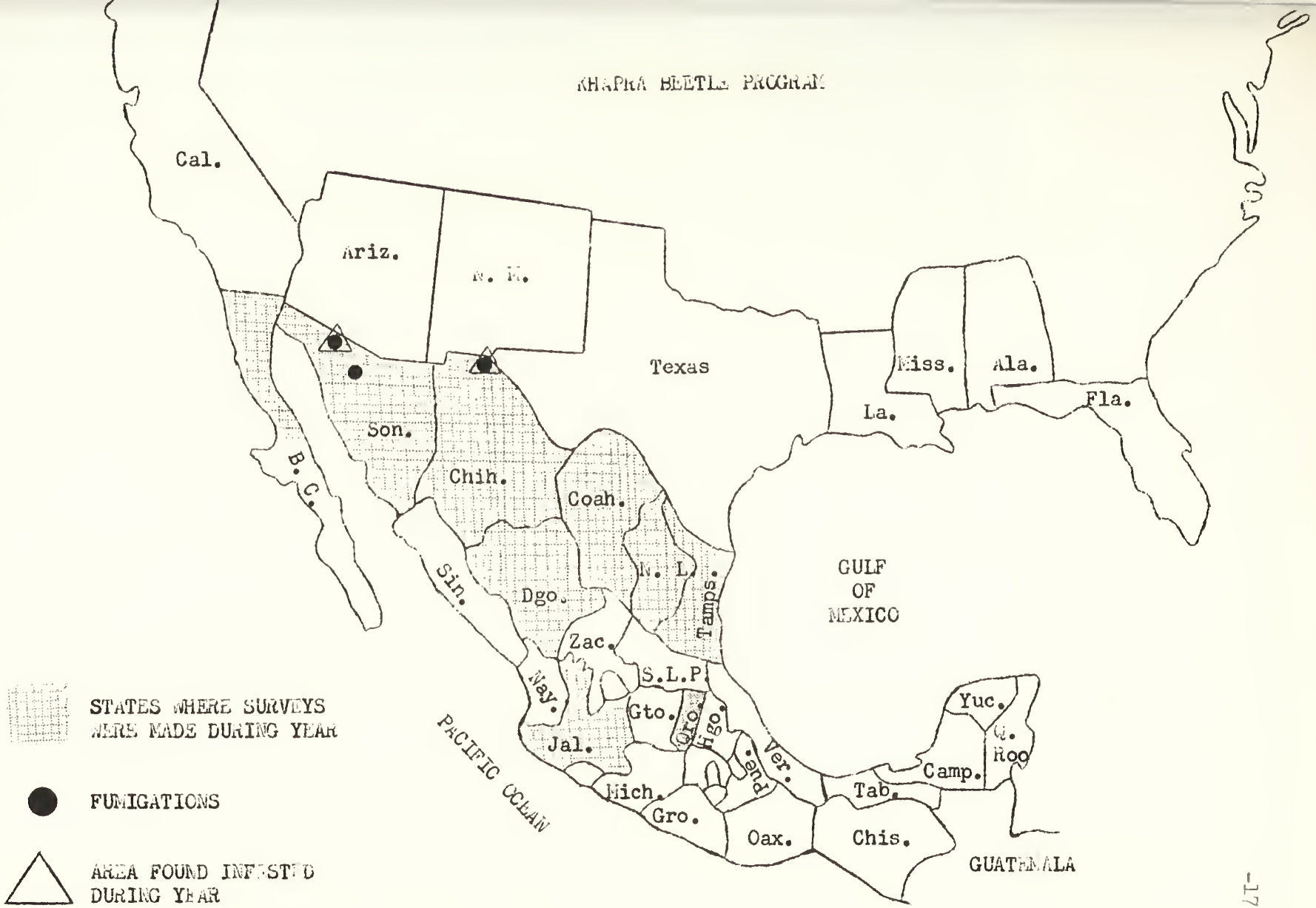


KHAPRA BEETLE

CONTROL ACCOMPLISHMENTS

SUMMARY F. Y. 1962

STATE	FUMIGATION	
	Number of Properties	Cubic Feet
Sonora	4	784,723
Chihuahua	1	891
TOTAL	5	785,614


KHAPRA BEETLE PROGRAM
Cal.
Ariz.
N. M.
Texas
Miss.
Ala.
La.
Fla.
Son.
B. C.
Chih.
Coah.
Sin.
Dgo.
N. L.
Tamps.
GULF
OF
MEXICO
Zac.
S.L.P.
Nay.
Gto.
Qro.
Hgo.
Ver.
Jal.
Mich.
Gro.
Oax.
Chis.
Tab.
Camp.
Yuc.
Q. Roo
GUATEMALA
PACIFIC OCEAN
STATES WHERE SURVEYS WERE MADE DURING YEAR
FUMIGATIONS
AREA FOUND INFESTED DURING YEAR

MEDITERRANEAN FRUIT FLY

The Mediterranean fruit fly is not known to be present in Mexico, However, it is present and infesting large areas in Central American countries of Costa Rica and Nicaragua. The Pan American Highway passing through these countries enters Mexico at the Southernmost most State of Chiapas bordering on Guatemala. Tourist traffic into Mexico over the highway is heavy. Shipping from Central America and air traffic add to this to present the serious hazard that the Mediterranean fruit fly might be introduced into Mexico. Mediterranean fruit fly trapping for detection was carried on at strategic locations in the State of Chiapas and on both the East and West coasts of Mexico. Steiner traps baited with Tri-medlure were used. Trap locations included highways, markets, seaports, and air terminals.

MEDITERRANEAN FRUIT FLY

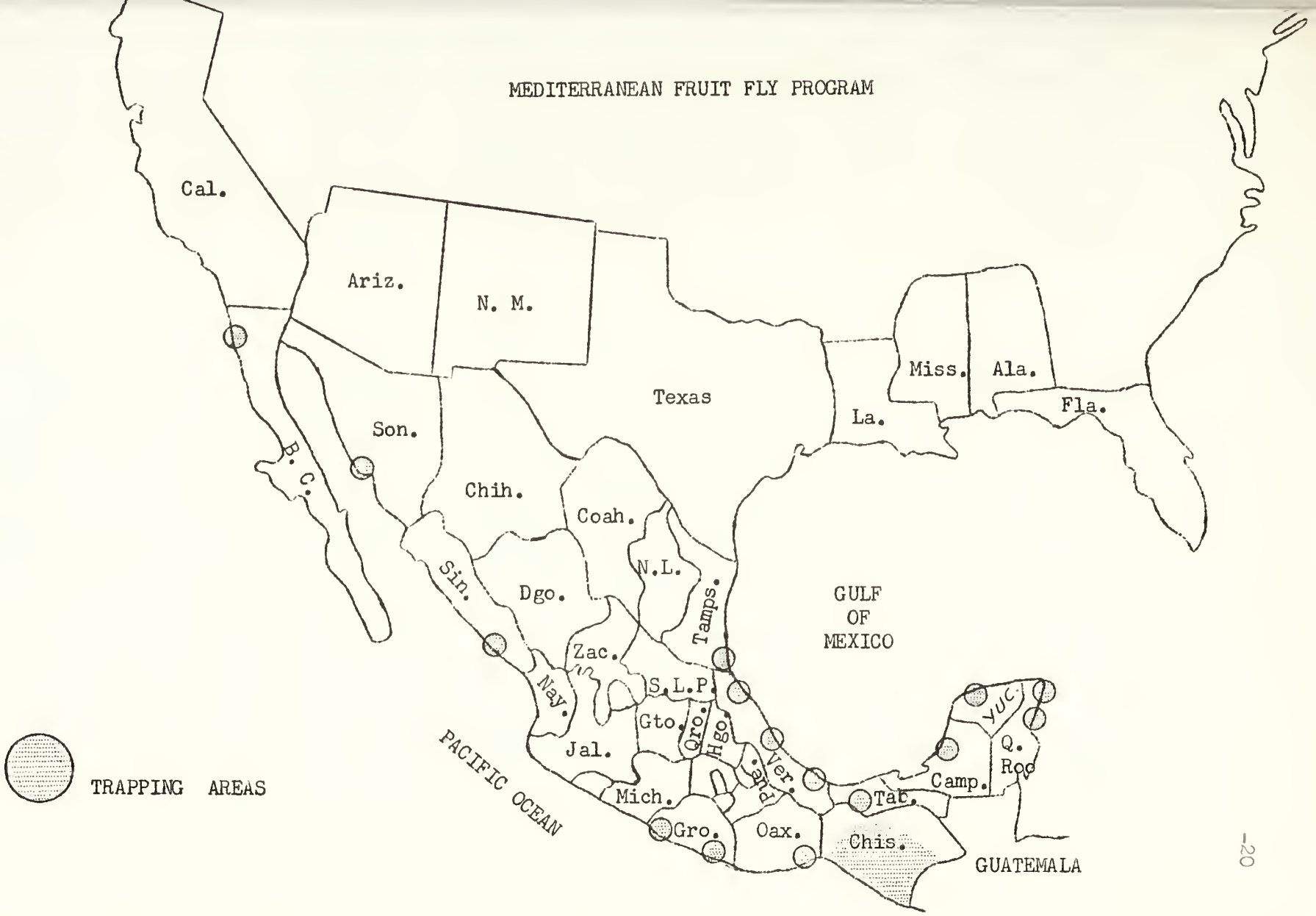
SURVEY AND DETECTION

SUMMARY F. Y. 1962

STATE	NUMBER OF		
	Traps in Use	Trap Inspections	Positive Specimens
Chiapas	1,591	54,977	0
Sinaloa	46	523	0
Sonora	36	390	0
Campeche	39*	**	0
Veracruz	70*	**	0
Guerrero	21*	**	0
Oaxaca	25*	**	0
Yucatan	30*	**	0
Tamaulipas	100*	**	0
Mexico, D. F.	10*	**	0
Quintana Roo	20*	**	0
	1,988	55,890	

* Traps reported by Ing. Rios Martinez of the Defensa Agricola.

** Not reported on Form PPC 7-30.


MEDITERRANEAN FRUIT FLY PROGRAM
Cal.
Ariz.
N. M.
Texas
Miss.
Ala.
Fla.
La.
Son.
B. C.
Chih.
Coah.
N.L.
Tamps.
Sin.
Dgo.
Zac.
S.L.P.
Nay.
Gto.
Qro.
Hgo.
Jal.
Ver.
Mich.
Gro.
Oax.
Chis.
Tab.
Camp.
YUC.
Q. Roo
GULF OF MEXICO
PACIFIC OCEAN
GUATEMALA
TRAPPING AREAS

PINK BOLLWORM

The cotton producing states of West Mexico are not known to be infested by the pink bollworm. The cotton producing states of East Mexico are generally infested Intensive surveys for detection of the pink bollworm in West Mexico were carried on during the growing season. Especial emphasis on detection surveys was given to the Culiacan, Sinaloa area where pink bollworm was found in 1957, and subsequently eradicated. Surveys for detection were also very intensive in those areas of Baja California and Northern Sonora bordering on Southwest Arizona owing to their proximity to the pink bollworm infested area in Arizona.

In East Mexico, while surveys were not as intensive as in West Mexico inspections were made in the several cotton producing areas as a guide in program planning and for comparability. Surveys in East Mexico indicated that infestations were generally lighter this year than last in most areas.

An important method improvement demonstration was carried out in the Laguna area of Coahuila and Durango. It had been determined that pink bollworm in some areas of the Laguna had developed resistance to DDT. Using DDT as a standard for comparison, the insecticides Guthion and Sevin were applied to selected plots of cotton plantings and the effectiveness of these insecticides as alternate insecticides for pink bollworm in the Laguna area was demonstrated. This growing season, the growers in the Laguna area, noting the results obtained, have used a considerable amount of Guthion and Sevin and apparently results have proved to be generally satisfactory.

A field testing of a sexlure discovered at the Cotton Investigations Laboratory of the Entomology Research Division at Brownsville, Texas was carried on. Results appear to be generally favorable, and while it is early yet to say, field testing results of this lure give promise of its eventual use at least as a survey tool.

Regulatory activities consisted of the operation of quarantine inspection stations in West Mexico to prevent the entry of pink bollworm from infested East Mexico to pink bollworm free West Mexico. Also, in East Mexico supervision of gins, oil mills, and compresses was carried on to assure compliance with the regulations as a requisite for certification of the movement of their cotton and cotton products into the United States.

It is of interest to note, that after a period of checking gin machinery and the kill of pink bollworms in the process of ginning in the Matamoros section in the State of Tamaulipas, the Defensa Agricola, late in the cotton season lifted the requirements for cotton seed sterilization as a continuous process of ginning, except for planting seed, and other cotton seed destined for movement outside of the area.

Stalk destruction and controlled planting dates were enforced in East Mexico, as a cultural control for pink bollworm. Too, as a pink bollworm preventive measure, stalk destruction and controlled planting dates were enforced in West Mexico in those areas adjacent to infested Northwest Arizona.

PINK BOLLWORM

CONTROL ACCOMPLISHMENTS

SUMMARY F. Y. 1962

STATE	MECHANICAL
	Number Treated Acres
Chihuahua	170,120
Coahuila	16,097
Durango	70,590
Nuevo Leon	24,884
Tamaulipas	582,756
TOTAL	864,447

PINK BOLLWORM

CORRECTED TABLE

SURVEY AND DETECTION

SUMMARY

F. Y. 1962

STATE	Number Surveyed		No. Infested		NUMBER		I N S P E C T I O N S			NUMBER
	Properties	Acres	Properties	Acres	Traps in Use	Trap Collec- tions	Bushels Gin Trash.	Blooms	Lint Cleaner	Positive Specimens
Chihuahua	2,259	4,060	49	1,670	-	-	-	-	-	559
Coahuila	56	18,490	53	6,941	-	-	-	-	-	29
Durango	61	6,222	61	6,222	-	-	-	-	-	-
Nuevo Leon	136	2,895	10	424	-	-	-	-	-	19
Tamaulipas	702	32,116	87	5,781	-	-	-	-	-	173
Sinaloa	157	14,143	0	0	1	-	5,269	425,764	874	0
Sonora	278	16,510	0	0	18	1,374	18,249	302,833	2,658	0
Baja California	37	1,823	0	0	15	477	17,569	215,758	9,255	0
TOTAL:-	3,686	96,259	260	21,038	34	1,851	41,087	944,355	12,787	780

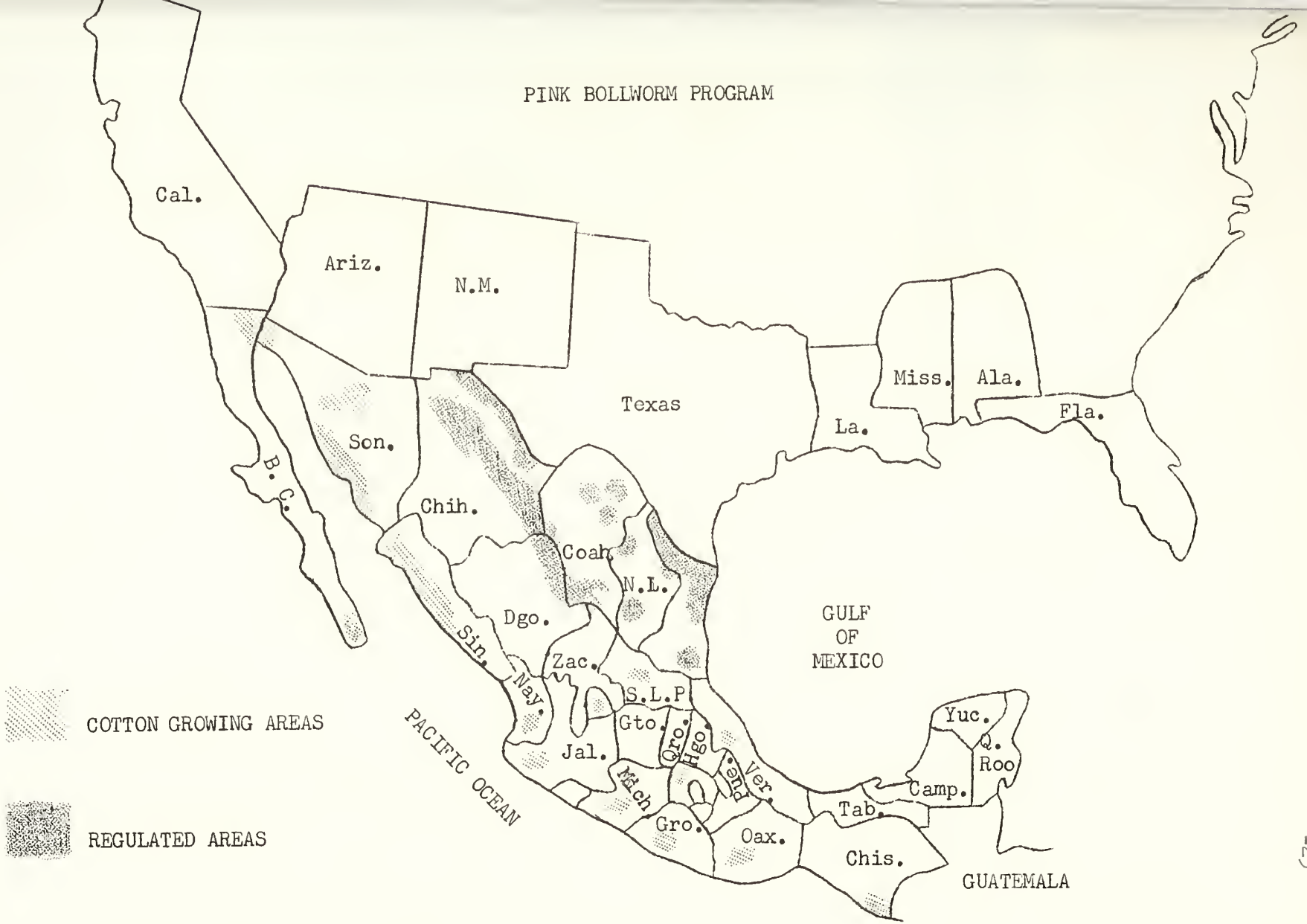
PINK BOLLWORM

REGULATORY ACTIVITY

SUMMARY

F. Y. 1962

STATE	NUMBER Inspection for Certification	COMMODITY LOT TREATMENT		
		No. Fumigated	Other	Total all Treatments
Chihuahua	601			
Durango	1,180			
Coahuila	972			
Nuevo Leon	138			
Tamaulipas	8,144			
Sinaloa	0	235	935	1,170
Sonora	0	1,904	69	1,973
Baja California	0	1	20	21
TOTAL:-	11,035	2,140	1,024	3,164


PINK BOLLWORM PROGRAM
Cal.
Ariz.
N.M.
Texas
Miss.
Ala.
Fla.
La.
Son.
B. C.
Chih.
Coah.
N.L.
Dgo.
Sin.
Nay.
Zac.
S.L.P
Gto.
Qro.
Hgo.
and.
Ver.
Jal.
Mich.
Gro.
Oax.
Tab.
Chis.
Yuc.
Q. Roo
Camp.
GULF OF MEXICO
PACIFIC OCEAN
GUATEMALA
COTTON GROWING AREAS
REGULATED AREAS

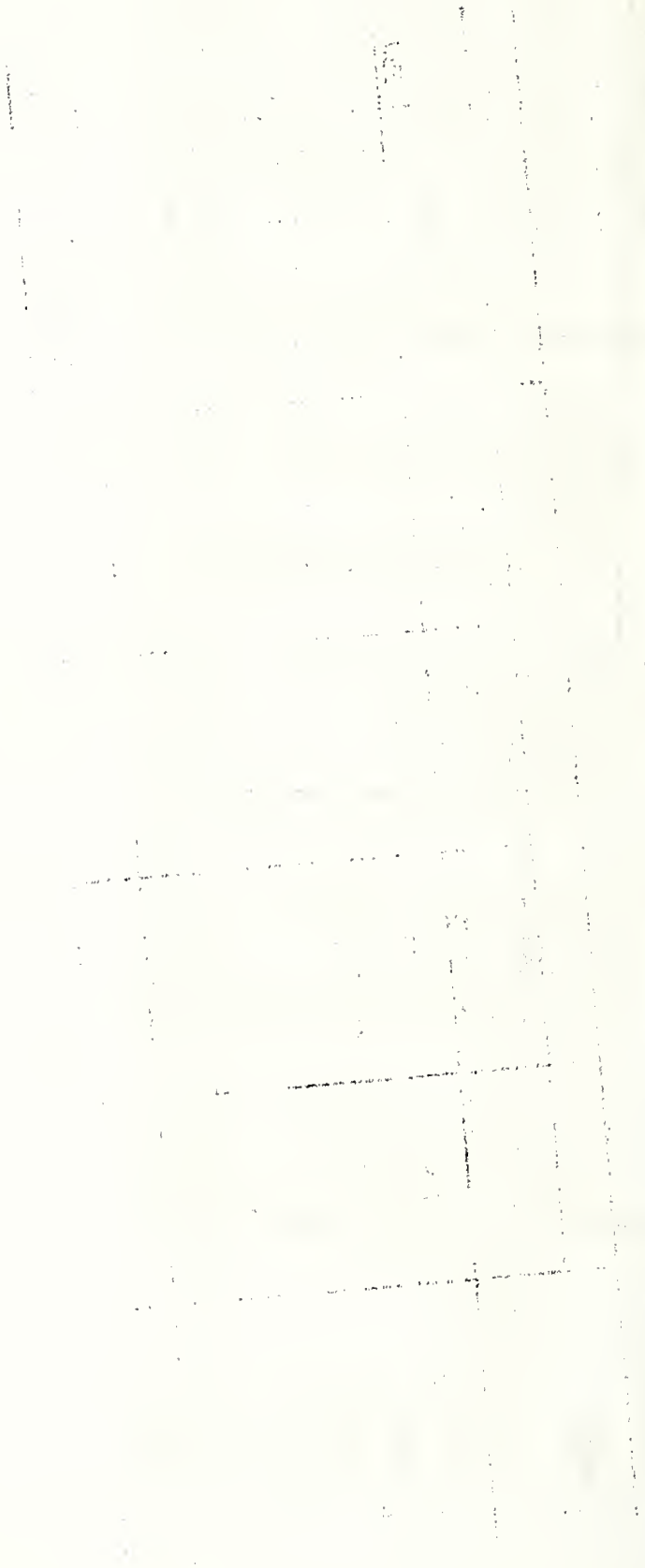
COOPERATIVE INSPECTION STATIONS

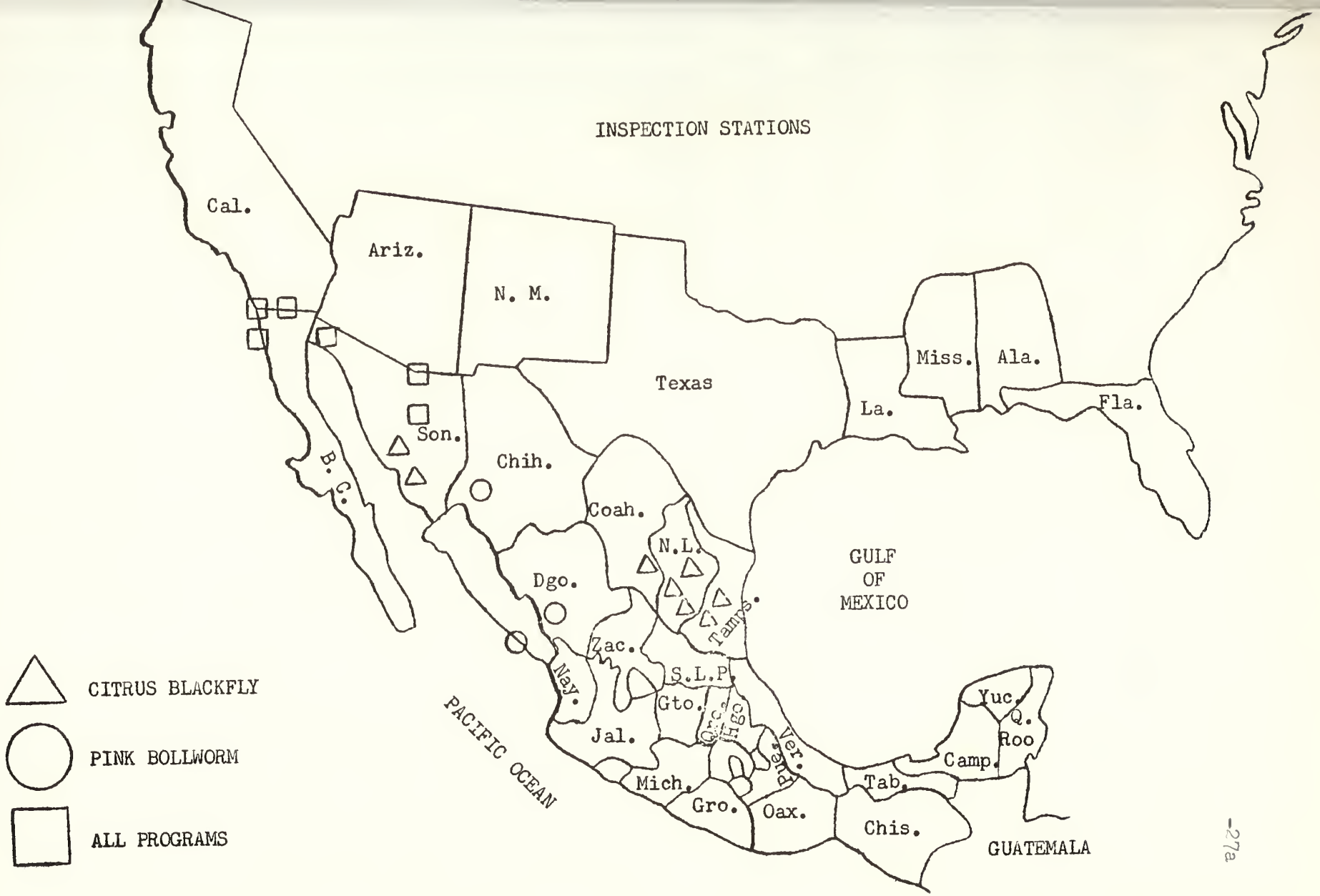
Inspection stations, strategically located, are operated to prevent the entry of plant pests into West Mexico. West Mexico is adjacent to the States of California and Arizona in the United States. It is of greatest importance that West Mexico be kept free of plant pests which include Mexican Fruit Fly, Mediterranean Fruit Fly, Pink Bollworm, Khapra Beetle, Citrus Blackfly and Bollweevil.

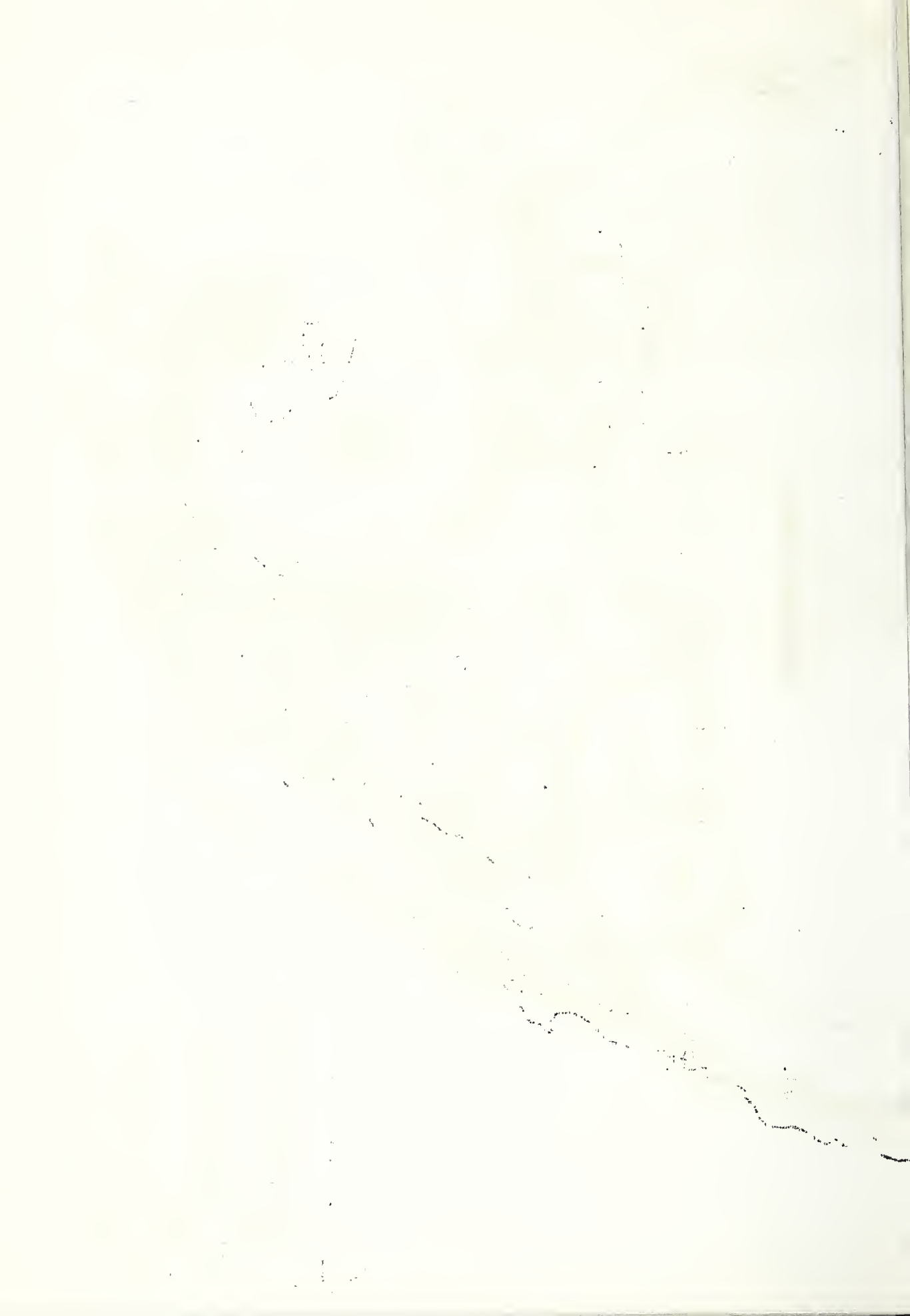
COOPERATIVE QUARANTINE INSPECTION

SUMMARY F. Y. 1962

STATE	NUMBER				HOST INTERCEPTIONS		
	Inspections	Passengers and Braceros	Pieces of baggage and Express	Vehicles cleaned or fumigated	MFF	CBF	PBW
Baja California	14,404	37,311	194,497	21	953	51	0
Sonora	51,823	237,441	14,904	1,973	117,451	321	6,393
Sinaloa	78,181	66,773	0	664	0	0	1,571
Durango	18,480	2,729	0	506	0	0	736
TOTAL	162,888	344,254	209,401	3,164	118,404	372	8,700




INSPECTION STATIONS
Cal.
Ariz.
N. M.
Texas
La.
Miss.
Ala.
Fla.
Son.
Chih.
B. C.
Coah.
N.L.
Dgo.
Tamps.
GULF
OF
MEXICO
Zac.
Nay.
S.L.P.
Gto.
Jal.
Qro.
Hgo.
Ver.
Mich.
Gro.
Oax.
Tab.
Chis.
Yuc.
Q.
Roo
Camp.
GUATEMALA
PACIFIC OCEAN
CITRUS BLACKFLY
PINK BOLLWORM
ALL PROGRAMS



BOLLWEEVIL

For many years the Ojinaga, Chihuahua cotton producing area had remained free of the bollweevil. It was thought the high dry climate of the area was an unsuitable environment for the insect. However, the bollweevil was first noted in this section in 1953. It has become firmly established there and is now the major economic cotton pest in the area.

Surveys conducted in 1959 and 1960 showed the bollweevil infestation was moving northward up the river to the Juarez, Chihuahua cotton producing area, across the Rio Grande from the extensive cotton plantings of the El Paso Valley in Texas.

In the Fall of 1961 a bollweevil suppression program was begun north of the Ojinaga section along the Rio Grande, and south of Juarez, Chihuahua. Aerial spray applications of insecticides were put on the cotton fields in the treatment area at 14 day intervals until a killing frost occurred.

The spraying operations carried out were in coordination with identical operations in adjacent area on the Texas side of the river.

Following the treatments debris inspections were carried out later in the year, and field inspections made early in the growing season, indicated that results were apparently favorable.

BOLLWEEVIL

TREATMENT PROGRAM
UPPER BIG BEND - JUAREZ VALLEY-
CHIHUAHUA

SUMMARY F. Y. 1962

TREATMENT DATE	LOCATION OF AREA TREATED	NUMBER ACRES TREATED	
		Insecticide (Air)	Mecanical
Sept. 19-22, 1961	Barrancos de Guadalupe to Bosque Bonito.	805	
Seot. 28 to Oct. 5, 1961	Barrancos de Guadalupe to Bosque Bonito.	888	
Oct. 11-17, 1961	Barrancos de Guadalupe to El Cuervo.	2,008	
Oct 23 to Nov. 7, 1962	Barrancos de Guadalupe to El Cuervo.	1,933	92
	TOTAL:-	5,634	92

BOLLWEEVIL
DEBRIS INSPECTION FOR
OVERWINTERING ADULT BOLLWEEVILS
JANUARY 1962
UPPER BIG BEND - CHIHUAHUA

SUMMARY F. Y. 1962

COLLECTION AREA	FORM SAMPLED	SQ. YDS. INSPECTED	BOLLWEEVILS FOUND
Ojinaga Valley (Untreated	3	10	3
Barrancos de Guadalupe to El Cuervo (Treated)	17	96	2
TOTAL:-	20	106	5

BOLLWEEVIL

EARLY SEASON 1962 SURVEY
UPPER BIG BEND-JUAREZ VALLEY-
CHIHUAHUA

SUMMARY

F. Y. 1962

DATE 1962	MUNICIPIO	FIELDS INSPECTED	FIELDS INFESTED	SPECIMENS COLLECTED	REMARKS
May	Ojinaga	20	5	5	Not treated in 1961
May	Ojinaga	1	0	0	Treated 1961
May	Guadalupe	4	0	0	Treated 1961
May	Manuel Benavides	3	0	0	Not treated in 1961
June	Ojinaga	8	0	0	Treated in 1961
June	Ojinaga	22	5	10	Not treated in 1961
June	Guadalupe	23	0	0	Treated in 1961
June	Guadalupe	11	0	0	Not treated in 1961
June	Manuel Benavidez	4	1	1	Not treated in 1961
June	Praxades Guerrero	2	0	0	Not treated in 1961
June	Juarez	8	0	0	Not treated in 1961
	TOTAL:-	106	11	16	

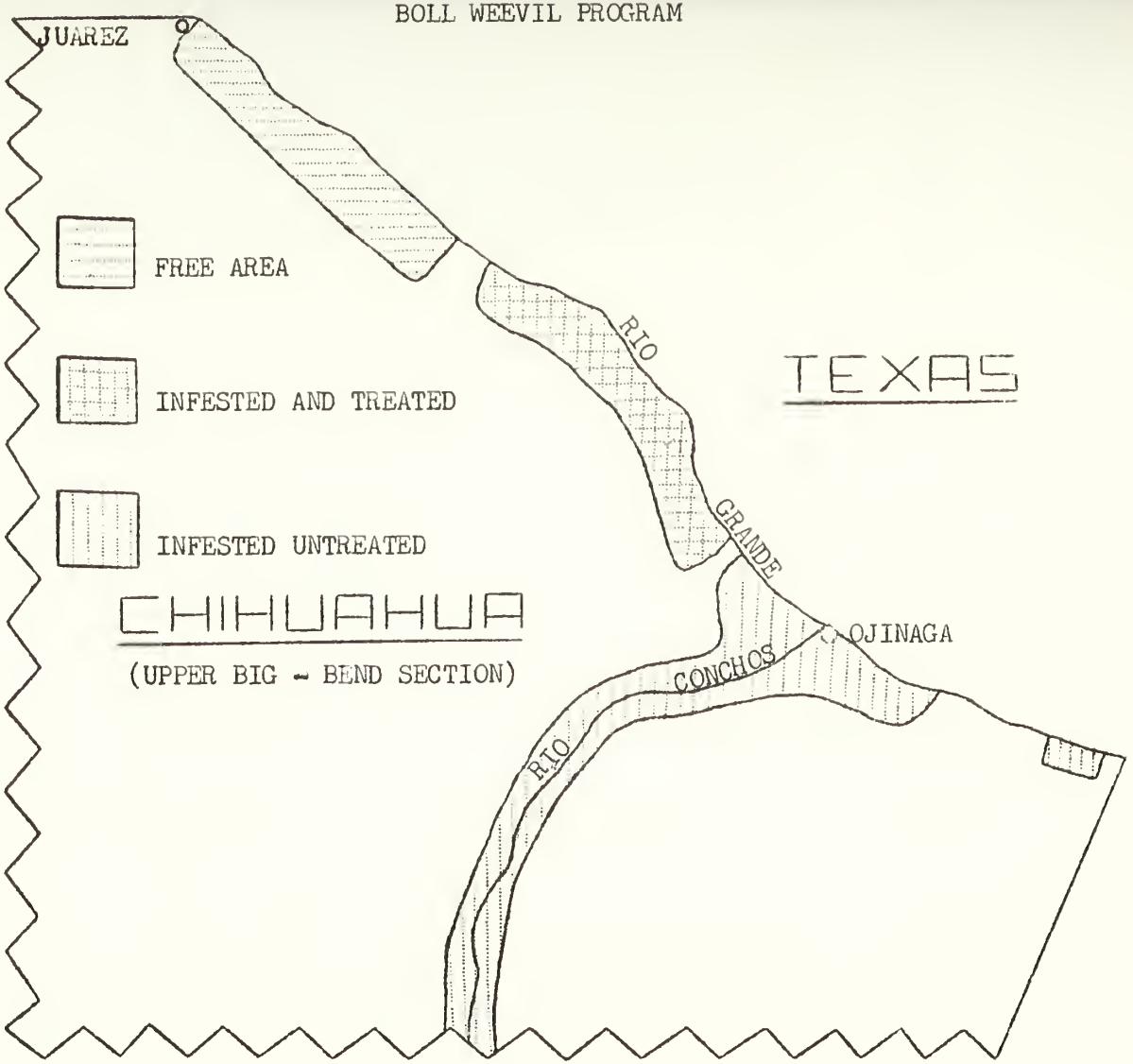
BOLLWEEVIL
LATE SEASON SURVEY
UPPER BIG BEND-JUAREZ VALLEY
CHIHUAHUA

SUMMARY F. Y. 1962

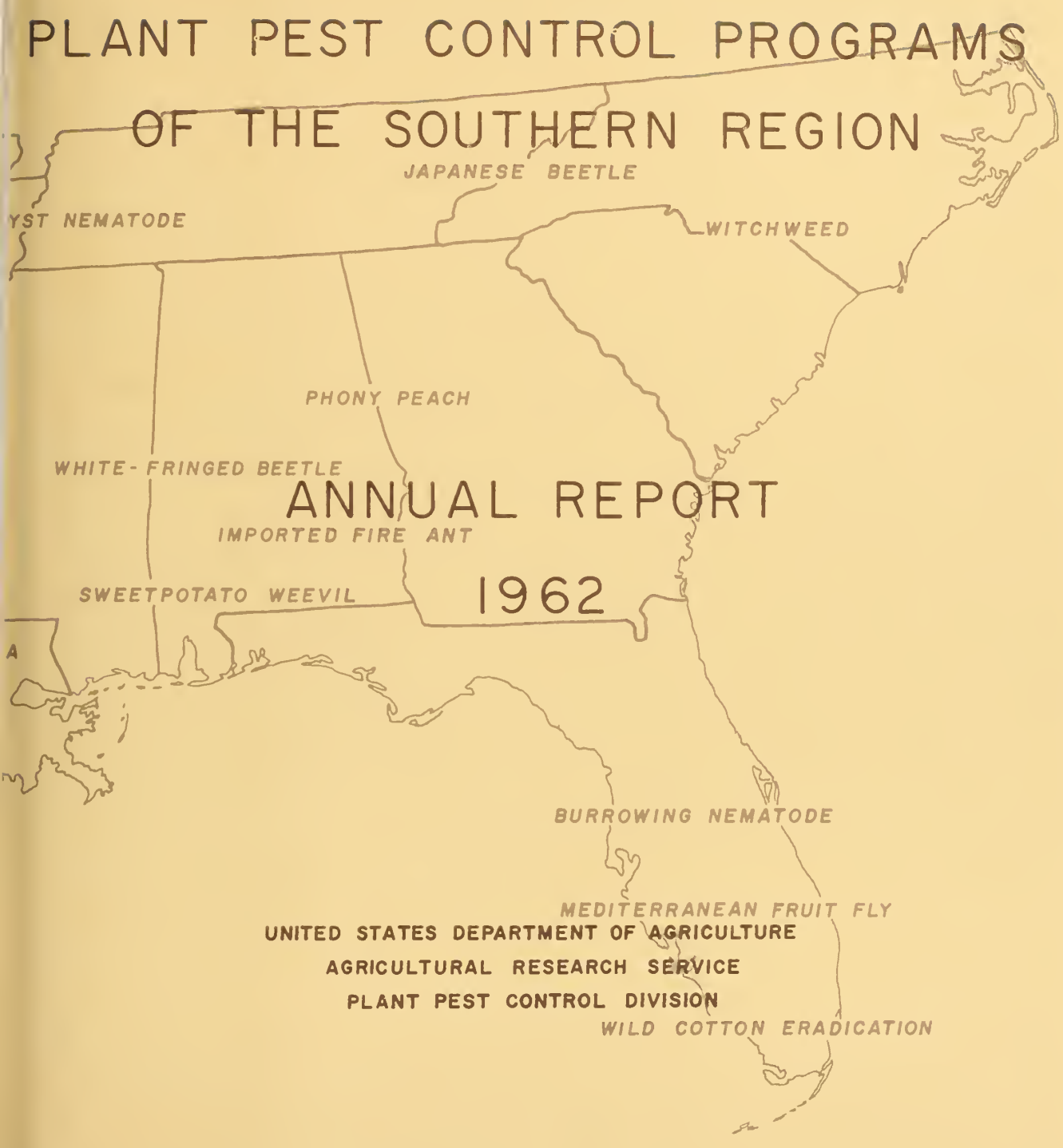
LOCATION	No. Fields Inspected	No. Acres Inspected (Est.)	No. Acres Infested (Est.)
TREATED AREA			
Barrancos de Guadalupe	16	103	103
San Antonio	38	193	193
Comedor	6	32	32
Los Fresnos	12	91	91
Pilares	35	241	241
Lomas Arenas	47	272	272
Bosque Bonito	7	71	71
El Cuervo	9	86	86
Luis Leon	9	95	95
Banderas	21	396	396
Cajoncitos	20	238	238
SUB-TOTAL	220	1,818	1,818
UNTREATED AREA			
Cedillos	4	67	67*
Porvenir	12	197	0
Juarez	6	67	0
SUB-TOTAL	22	331	67
GRAND TOTAL	242	2,149	1,885

* Late season finding in 4 fields, not considered as established infestations.

BOLL WEEVIL PROGRAM



PLANT PEST CONTROL PROGRAMS OF THE SOUTHERN REGION



ANNUAL REPORT

1962

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

.....

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

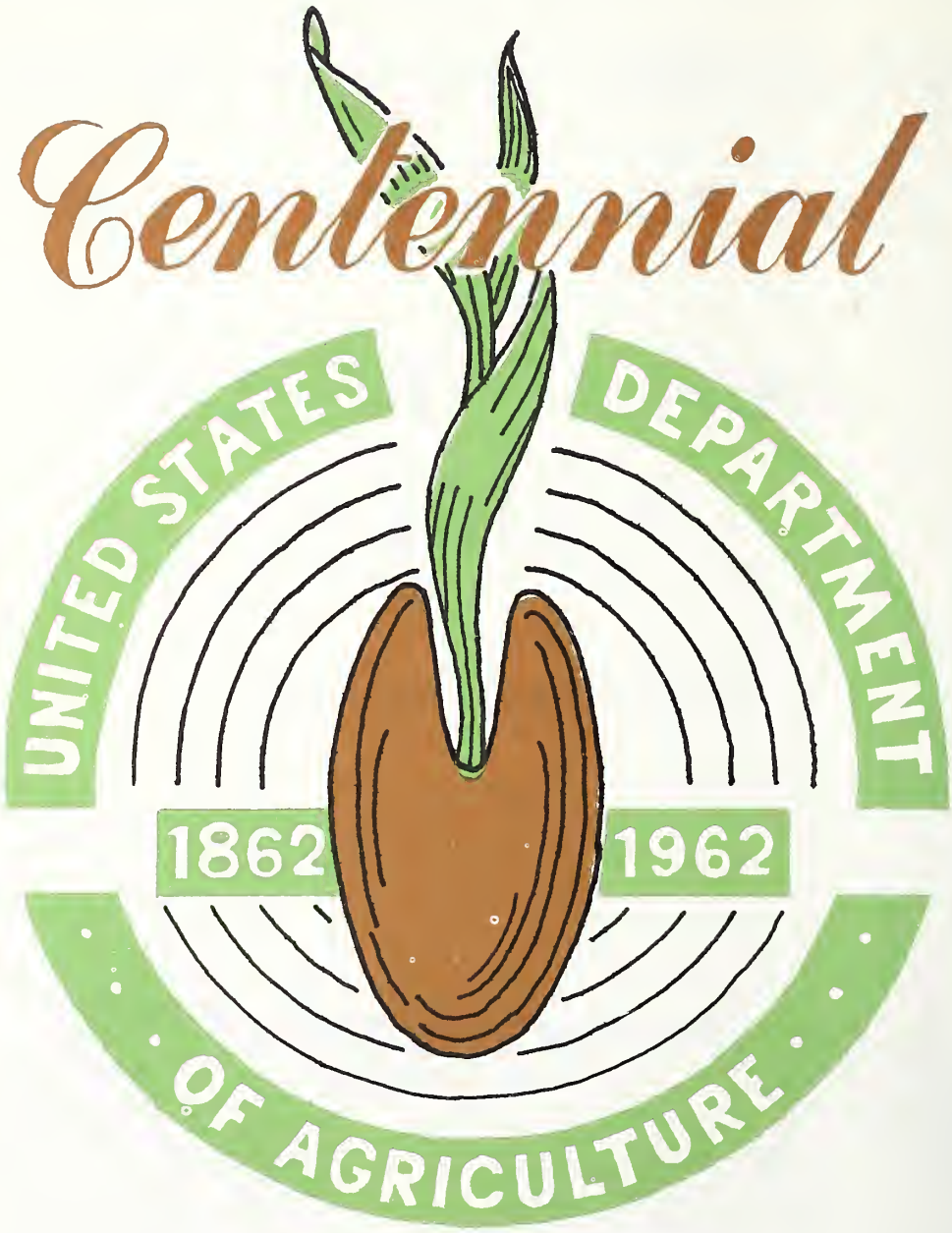
PLANT PEST CONTROL DIVISION

ANNUAL REPORT

- 1962 -

- SOUTHERN REGION -





Growth Through Agricultural Progress

SOUTHERN REGION OFFICE CELEBRATES 100 YEARS OF AGRICULTURE

The Southern Region Office of the Plant Pest Control Division celebrated the 100th anniversary of the Department of Agriculture by holding open house at the Gulfport offices on May 5 and 6.



In addition to the formal exhibits on Japanese Beetle, Insect Pests Surveys, Witchweed, and Pesticide regulatory work, local exhibits of insecticide materials and specialized equipment were prepared.

Other exhibits were set up displaying the actual work carried on in the Imported Fire Ant Laboratory, the Chemical Laboratory, and the Insect Identification Section of PPCD, and by the Pesticide Regulation Laboratory.

Early in the week the Mayor of the City proclaimed May 5 and 6 as U. S. Department of Agriculture days in Gulfport, and much publicity was given to the occasion by the local papers and the several radio stations.

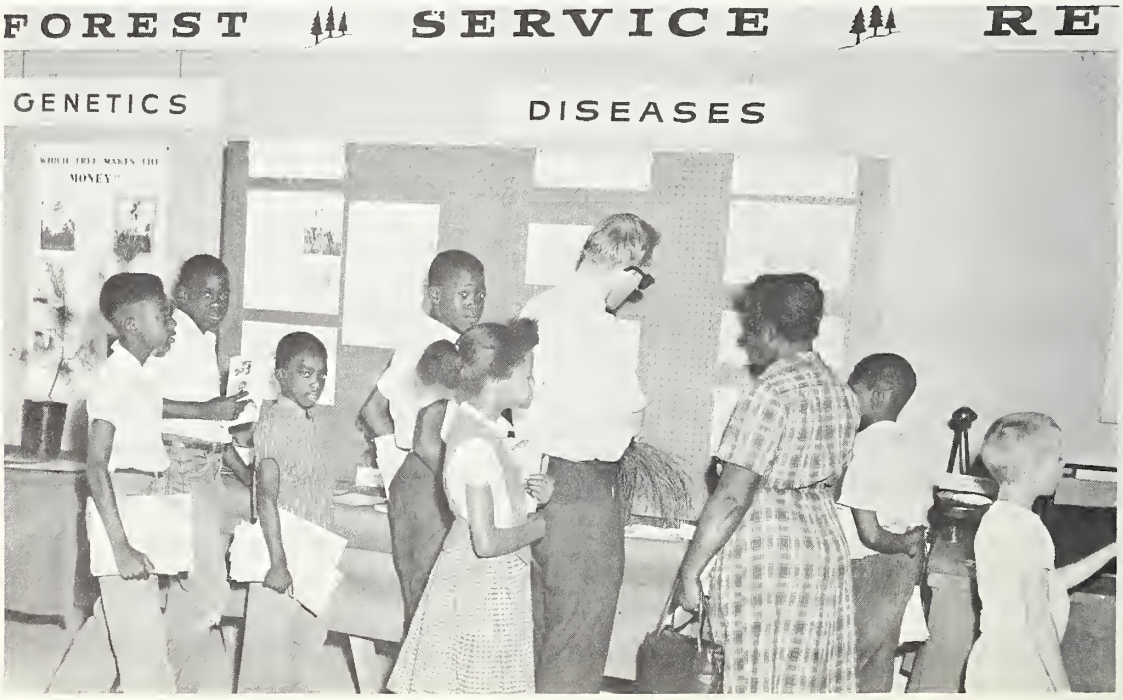


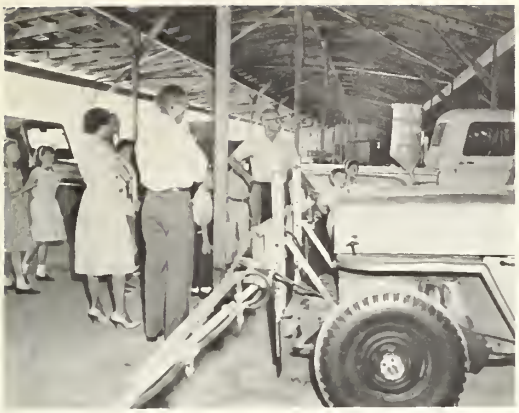
Posters announcing the occasion were prepared and placed in windows in the various stores along the Coast, and announcements were made among civic organizations, church groups, and schools. Arrangements were made with local school authorities to hold High School Day at the Plant Pest Control Division Office on Friday, May 4. All of the biology classes from the Gulfport High School attended this function in sections of approximately 50 students each. Six classes were conducted through the various exhibits, and the workings of the Department were explained to them by

representatives of the various agencies that had prepared the exhibits. We estimate that over 600 people in various walks of life from the cities along the Coast, and from points in Louisiana and Alabama, visited the displays and participated in one or more of the tours.



The occasion, we believe, was a highly successful one, and school authorities have requested that we arrange each year to have a High School Day when students from high schools throughout the county can visit the laboratories to become acquainted with the workings of the Department.














PEST CONTROL

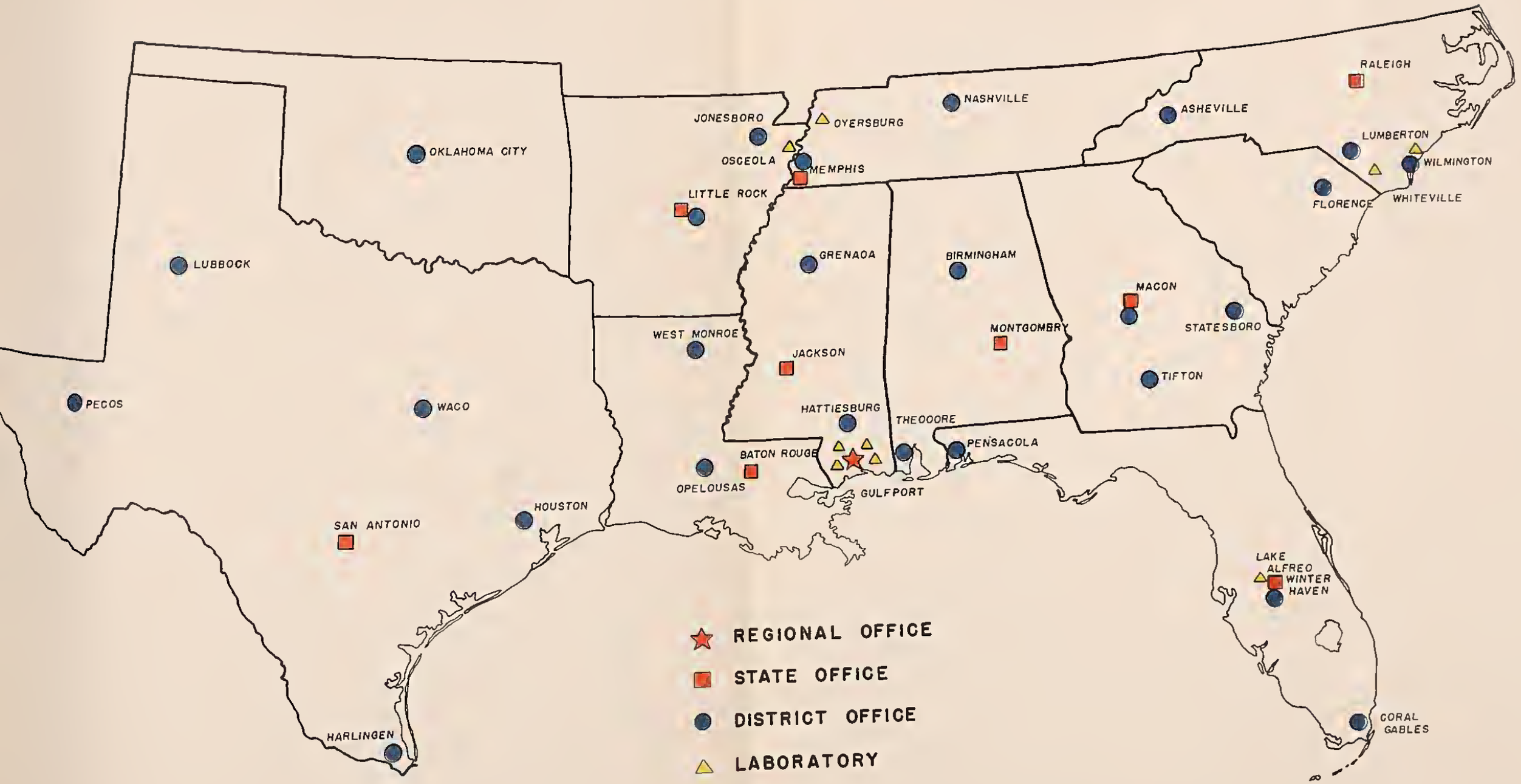



RESEARCH
INSECTS

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION

SOUTHERN REGION



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ASSOCIATED ACTIVITIES

Considerable attention was devoted to the educational phases of our programs during the current year. Many showed a substantial increase in the meetings held, talks given, and film or radio strips used. The most marked increase in public meetings and the use of educational material was on the Imported Fire Ant and the Sweetpotato Weevil Programs.

This year new program aids were received for several of the programs, and some of the states published aids of their own, which increased the literature available for distribution. Some of this material was prepared for special groups of people. An example is the development of program aids to encourage school children in imported fire ant fringe areas to assist with survey activities. This was worked on a school district basis and has proved very successful in the states where it was used.

There was also a considerable increase in educational work on the Sweetpotato Weevil Program. New program aids, hand-out sheets, and posters were developed for this program, which did much to increase public interest and support of this worthwhile endeavor. Fewer meetings were held on the Grasshopper Program during the year because of lack of development of grasshopper populations in Oklahoma and Texas. Educational meetings on the Witchweed Program, also, showed a decline, largely because people in the area are becoming more familiar with program operations, and less time is required in explaining this work. The Phony Peach Program came in for more attention this year, largely because of the reactivation of the program in Mississippi and a renewed interest in the work in Louisiana. The White-Fringed Beetle Program received its usual attention in all areas of infestation.

Everywhere we are endeavoring to step up the interest in Cooperative Economic Insect Survey activities, and there was some increase in meetings held for this purpose. A number of the states showed considerable interest in khapra beetle, and some 50 meetings were held during the year to discuss this program. The Japanese Beetle Program received considerable attention from an educational standpoint, particularly in Tennessee and North Carolina; and 6 meetings were held and 15 talks were given on the Mediterranean fruit fly work.

Table 1.--Summary of Associated Activities, by Program, Fiscal Year 1962

Programs	Public meetings attended	Presentations					Feature and news stories	Extent these aids were used				
		Talks	Slides	Films	Radio	TV		Exhibits	Bulletins	Circular	Infestation maps and posters	Special reports
Burrowing Nematode	9	4	2	...	...	2	...	...	100	130	25	...
Citrus Black Fly	3	1	2	...	2	...	4	...	...	...	...	...
Coop. Economic Insect Survey	31	6	51	50	...	3	9	...	...	150	...	2
Grasshopper	27	3	1	...	2	...	...	...	62	171	159	1
Hoja Blanca	...	3	...	...	...	...	...	...	...	...	...	...
Imported Fire Ant	328	346	687	117	89	116	125	33	4,298	21,821	1,306	63
Japanese Beetle	70	64	512	7	45	10	47	27	1,125	1,250	156	22
Khapra Beetle	50	6	88	3	9	8	24	...	301	144	20	...
Mediterranean Fruit Fly	6	15	1	...	6	10	13	82	1,145	25,565	644	2
Mexican Fruit Fly	6	1	2	...	1	...	4	...	...	...	...	2
Peach Mosaic	...	...	...	...	...	...	...	8	...	...	...	...
Phony Peach	44	3	75	1	11	4	15	...	296	100	6	1
Pink Bollworm	61	45	11	3	16	10	104	2	128	9,868	267	...
Soybean Cyst Nematode	26	173	329	...	2	...	...	...	55	523	29	...
Sweetpotato Weevil	180	102	362	4	114	15	94	49	3,618	5,365	939	2
White-fringed Beetle	171	240	690	4	53	8	45	38	2,712	1,758	162	2
Wild Cotton	...	3	1	...	...	2	...	...	...	...	...	...
Witchweed	97	228	732	17	49	16	29	32	5,708	1,095	163	2
Total	1,109	1,243	3,546	206	399	204	513	271	19,548	67,940	3,876	99

Table 2.--Summary of Associated Activities, by State, Fiscal Year 1962

State	Public meetings attended	Presentations					Feature and news stories	Extent these aids were used				
		Talks	Slides	Films	Radio	TV		Exhibits	Bulletins	Circulars	Infestation maps and posters	Special reports
Alabama	106	136	21	12	40	3	77	156	377	13,665	656	13
Arkansas	22	23	13	31	6	84	19	...	...	475	20	2
Florida	53	58	13	6	6	21	16	57	2,454	25,981	717	...
Georgia	180	133	153	63	60	13	70	23	4,928	1,250	76	...
Louisiana	51	35	14	15	4	...	21	10	421	3,046	31	3
Mississippi	78	67	43	33	11	4	18	9	2,267	11,635	1,276	1
N. Carolina	104	715	1,570	15	13	1	...	...	3,834	322	168	...
Oklahoma	32	24	...	...	...	...	...	...	...	7,150	150	...
S. Carolina	368	...	1,675	24	239	52	165	6	3,902	1,381	178	...
Tennessee	6	6	18	3	1	17	6	...	710	325	88	75
Texas	109	46	26	4	19	9	121	10	655	2,710	516	5
Total	1,109	1,243	3,546	206	399	204	513	271	19,548	67,940	3,876	99

BARBERRY ERADICATION

All activities relating to the Barberry Eradication Program in the Southern Region are of a regulatory nature and consist of an annual inspection of all nurseries growing or shipping barberry or mahonia plants interstate, to assure that only rust-resistant species or horticultural varieties of barberry or mahonia plants are grown or handled. This is to prevent the possible introduction, through the movement of nursery stock, of rust-susceptible plants into states having an eradication program.

Activities on this program during fiscal year 1962 are reflected in Table No. 3.

Table 3.--Barberry Program, Regulatory Activities, Fiscal Year 1962

State	Number of properties	Inspection for certification	
		Acres nursery	Other inspections
Alabama	24	4,808	2
Arkansas	1	125	...
Florida	3	2,350	...
Georgia	13	584	...
Louisiana	10	771	1
Mississippi	66	163	5
N. Carolina	6	72	...
Oklahoma	9	916	...
S. Carolina	3	610	...
Tennessee	23	48	...
Texas	12	2,247	3
Total	170	12,694	11

CITRUS BLACKFLY

Citrus blackfly is rather widespread on citrus and other host plants in Mexico, where a control program is in effect. One important phase of this program in Mexico is to keep the population to an absolute minimum, especially in areas near enough to the border that it could be an immediate threat to the citrus in the Lower Rio Grande Valley of Texas. It has periodically invaded the citrus belt but has never been permitted to build up to such a point that extensive damage was suffered.

This, therefore, is primarily a survey program which consists of the visual examination of the leaves of citrus trees. It is an exacting, tedious job, requiring specialized training, specific skills, and close supervision. The most intense survey is carried on in groves where the probability of introduction is considered greatest, these being near the border and the major traffic arteries. The intensity of the survey within a grove likewise varies with the estimated probability of its being introduced in that particular location. The PPC personnel in Texas are kept constantly informed of conditions in Mexico as a guide to their survey work.

Surveys for citrus blackfly which were initiated in Texas on March 6, 1961 (FY 1961), ended on July 28, 1961, with no infestations found. This was the fifth successive year in which no citrus blackfly was found in the Rio Grande Valley, the last infestation being found on August 31, 1956.

In January 1962, a heavy freeze hit the Rio Grande Valley, damaging many of the fruit trees. The first survey made after the freeze was begun the latter part of March. The general survey began April 15, when enough foliage appeared on the trees for inspection purposes. Due to the damage caused by the freeze, only two Federal men were placed on survey. Two additional men are to be employed to carry on this work on a year-round basis during this changing period. State inspectors are assisting in the work as their time permits. The results of inspections from April through June have been negative. During the survey occurring within the 1962 fiscal year, 35,558 hosts on 2,046 properties were examined.

Inspections are now being confined mainly to town lots, tourist courts, and main thoroughfares leading to and from Mexico. Reports received on the infestation in Mexico indicate there has been a decrease of approximately 90 percent in the heavy blackfly infestations in the chemically controlled zone in northeastern Mexico.

The following photographs show a typical, heavy infestation of Citrus Blackfly. The female citrus blackfly lays her eggs on the under side of the leaves in the form of spirals. In making inspections for the pest, close observation is necessary to detect egg spirals, larvae, or pupae.





MEDITERRANEAN FRUIT FLY

The Mediterranean fruit fly outbreaks of 1929 and 1956 demonstrated that this pest is a constant threat to the citrus industry in the United States. Surveys using the Steiner trap have been conducted since 1957 in the citrus producing states bordering the Gulf and also in Georgia and South Carolina. The freeze of January 1962 almost eliminated citrus from Louisiana and the traps were temporarily removed. Trapping also was reduced in Mississippi, Alabama, Georgia, and South Carolina. The trapping in the Lower Rio Grande Valley of Texas was carried on largely in conjunction with other work, as was the case in the other states except Florida. The normal trap load in Florida consisted of 7,000 to 8,000 Steiner traps baited with a combination of cue-lure and methyl eugenol on one wick and with trimedlure on the other. These traps were inspected at intervals of 3 weeks as normal procedure.

A fly was found in a trap at Miami, Florida, on June 8, and identified as a Mediterranean fruit fly on June 13. An emergency program was placed into effect immediately, which involved increasing the density of traps throughout the State, and particularly in Dade and Broward Counties. Spray was applied to the infested areas as quickly as possible. By June 30 the number of traps had been increased to nearly 12,000, and over 100,000 acres had been sprayed. Infestation was found on 34 properties and 98 specimens were recovered. Division personnel with previous experience on survey and control of the Mediterranean fruit fly were brought in from various parts of the Region. Experienced State employees were removed from their normal assignments and placed on the Mediterranean fruit fly control. This was considered one of the highest priority jobs in the Region. An adequate reserve of lure, traps, and spray material was available to carry on the expanded program until more could be obtained. The procedure followed was essentially the same as that used in 1956-57. The principal differences were that, generally, trap densities were greater and the margins sprayed surrounding the finds were wider.

Federal and state quarantines were placed into effect immediately and revised as necessary to keep up with the spread of the pest as indicated by the survey results. Fortunately, the outbreak occurred at a time when the movement of host material was at or near the minimum. The provisions and operation of the quarantine were similar to those of 1956-57, except that roadblocks were not deemed necessary.

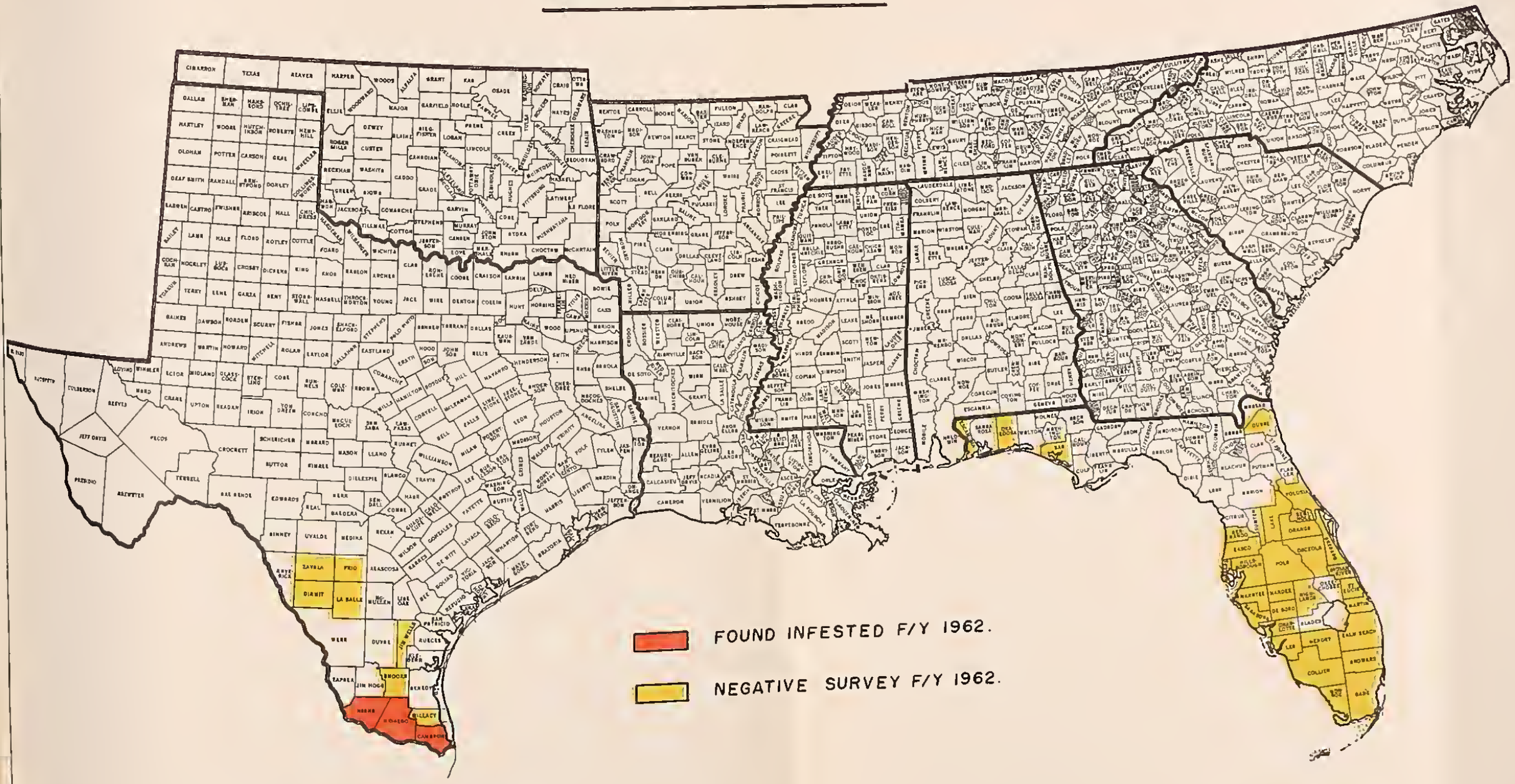
As was the case with previous introductions, no specific information could be obtained as to the probable means of introduction. Larval findings, together with trap catches, indicated that the initial outbreak was somewhere within a residential area in the vicinity of 20th Avenue and 87th Street in Miami, which is a middle-class residential area, with a minimum of commercial traffic likely to carry infestation. This suggests the probability that infested fruit was brought in by someone employed on aircraft or seacraft.

Table 4.--Mediterranean Fruit Fly Program--Survey, Control, and Regulatory Activities, Fiscal Year 1962

State	Survey and detection				Control	Regulatory				
						Insp. for certification			A. treated for certif. purposes	Commodity lots treated
	Number properties surveyed	Number traps in use	Number positive specimens	Number infested properties	Acres treated with insecticide by air	Number properties	Processing plant visits	Other	Soil	Fumigation
Alabama	...	14	...	...	...	...	...	...	...	...
Florida	...	11,815	98	34	114,299	55	40	15	3	3,667
Mississippi	...	40	...	...	...	...	...	...	...	...
S. Carolina	...	42	...	...	...	...	...	...	...	...
Texas	210	226	...	...	...	...	...	...	...	...
Total	210	12,137	98	34	114,299	55	40	15	3	3,667

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

MEXICAN FRUIT FLY



MEXICAN FRUIT FLY

The Mexican fruit fly is a native of Mexico and damages citrus as a result of larvae hatching and developing in the fruit. There is a wide range of noncommercial hosts throughout much of Mexico, providing for a continuous population in that country. It can be expected to invade the Lower Rio Grande Valley and establish infestations in small numbers each year.

In July, August, and September of 1961, 40 traps were operated in Starr County, Texas, which yielded 16 Mexican fruit flies during the period. In September, additional traps were set in Cameron, Hidalgo, and Willacy Counties, and by the end of the month 2,240 traps were in operation. From the beginning of each citrus season to December 1, the Region has operated a minimum of 2,000 traps as a regulatory basis for shipping citrus to the states of Florida, Arizona, and California. The maximum number of traps in operation in any one period totaled 2,445 in ten counties. At the close of the fiscal year, 200 traps were still in operation.

During the season, 65 Mexican fruit flies were trapped in Cameron, Hidalgo, and Starr Counties.

The 1961-62 harvesting and shipping season opened officially on September 15, 1961, and the fruit of the 1960-61 crop was still being shipped. This is the first time in the history of the Mexican Fruit Fly Quarantine that the new and old crops overlapped. In early January, one of the coldest northers in history struck the Rio Grande Valley and great damage was done to the trees. However, by the close of the fiscal year rehabilitation of the freeze-damaged trees was progressing. Some fruit was expected this year but the crop is not expected to be more than 5 percent of the last year's production of around 11 million boxes.

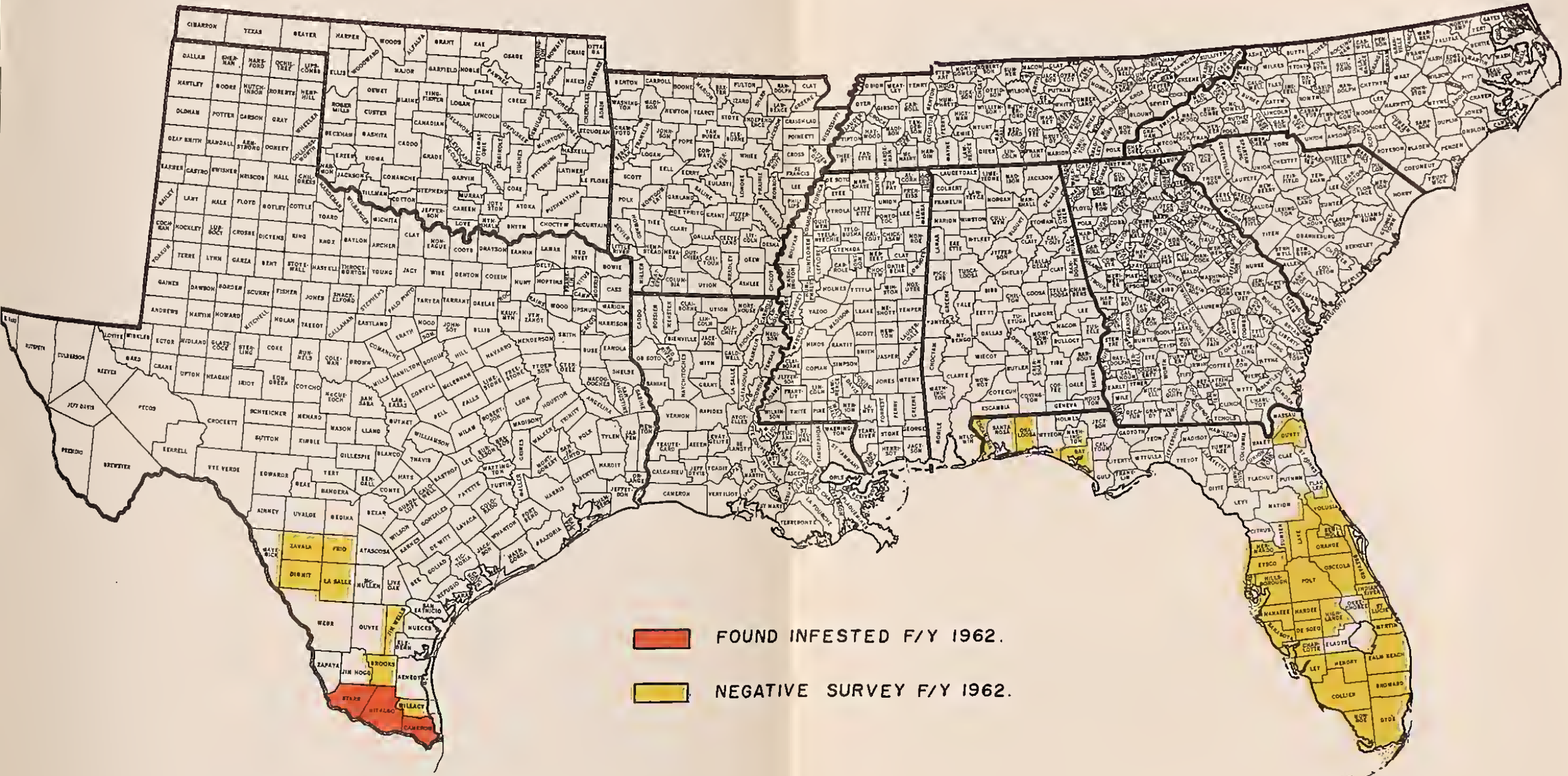
The fumigation requirement on all citrus shipped to major citrus producing states went into effect December 1, 1961. Due to light larval infestations, the date of beginning the treatment period for grapefruit shipped to southern states was extended from March 1 to April 1. As in the past, because of advance publicity, no difficulties were encountered.

Table 5.--Mexican Fruit Fly Program, Survey and Regulatory Activities, Fiscal Year 1962

State	Survey and detection					Regulatory					
	Surveyed			Infested		Inspection for certification					Commodity treatment
							Acres		Processing plant visits	Other	
	No. props.	Traps in use	No. positive specimens	No. props.	No. acres	No. props.	Nurs.	Other			Lots serviced Fumigation
Florida	...	456	...	...	...	...	...	...	...	...	...
Texas	160	1,115	65	22	491	322	...	42,932	1,741	43	24,438
Total	160	1,571	65	22	491	322	...	42,932	1,741	43	24,438

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

MEXICAN FRUIT FLY



COOPERATIVE ECONOMIC INSECT SURVEY AND DETECTION

This program consists of two phases; namely, economic insect surveys and special surveys. Economic insect surveys deal with the work of survey entomologists and pertain principally to the varying abundance, threatening populations, and other matters of interest to the public involving insects of economic importance which are generally present in a given area. Special surveys pertain to specific pests, frequently in a restricted portion of the region, following a similar pattern year after year. Detection surveys are for specific pests not known to be present in the area in question, but which are definite threats to a substantial portion of the nation's economy.

During the fiscal year, about 400 weekly reports on economic insect conditions were submitted. In addition, practically every state in the Region submitted summaries of insect conditions for the calendar year 1961, as well as loss estimates for specific insects or insect complexes during the same year. Formal agreements were in effect during the year with seven states and part of the year in one state. Excellent cooperation was received from the three states who did not employ survey entomologists as such. Insect Detection Workshops were held at Little Rock, Arkansas; Auburn, Alabama; and Houston, College Station, Lubbock, and Weslaco, Texas. These workshops were, for the most part, attended by state, as well as federal personnel. Particular emphasis was placed on training the men in field identification of economic insects present in their respective states.

Following are summaries of the special surveys which were conducted during the year.

Chinch Bug

Chinch bug surveys were made during the fall of 1961 in Oklahoma and Arkansas. This was a continuation of a survey which has been carried on for several years at the request of the states. The results were reported to the Washington Office where they were consolidated with similar surveys from other states and the results released to interested parties. The usual type of survey was made and consisted of five stops in each of the counties concerned and examination of samples of bunch grass, which is the preferred host. Further observations were made on other hosts and the population counts were broken down into five categories, ranging from noneconomic to very severe. The survey covered 18 counties in Arkansas and 42 counties in Oklahoma. Significant infestations were found in the following eight counties in Arkansas: Clay, Greene, Jackson, Lawrence, Lonoke, Poinsett, Prairie, and Randolph. Significant infestations also were found in the following ten counties in Oklahoma: Creek, Comanche, Johnston, Lincoln, Muskogee, Okfuskee, Okmulgee, Pottawatomie, Rogers, and Tulsa.

The area in each state supporting economic populations represents a very small percentage of the total area. The areas supporting severe and

very severe populations were quite small. It does not appear likely that this survey will be continued to any great extent in the future.

Beet Leafhopper and Potato Psyllid (Texas and New Mexico 1962)

Each year a survey is made of the western and southeastern portions of New Mexico in order that an estimate of the beet leafhopper population, along with the conditions and distributions of its host plants, might be obtained. The 1962 beet leafhopper surveys for Texas and New Mexico were combined, the same team surveying both states.

The survey was started at Sonora, Texas, on March 5, 1962, and completed at Plains, Texas, on March 22, 1962. Host plants were not as numerous as last year. The fluctuations of Texas temperatures from extremely cold to extremely hot and back to cold again in February and March greatly retarded and reduced in number most host plants. Although counts were much lower than the 1961 survey, the 1962 survey showed beet leafhoppers to be more widely distributed. A total of 4,050 square feet sampled on the Texas survey produced 158 beet leafhoppers. This amounts to 3.9 beet leafhoppers per 100 square feet. It represents a reduction over the 1961 count and is about equal to the 1960 survey count.

Unusual seasonal conditions allowed much of the potato psyllid survey to be done concurrently with the beet leafhopper survey, which began March 5, 1962. However, the 1962 potato psyllid survey in Texas and the southeastern portion of New Mexico was not completed until March 29, 1962. The host, wild Lycium, was found to be in all stages of development. It is thought the extreme fluctuations in temperatures during February and March throughout the potato psyllid overwintering areas of Texas and New Mexico adversely affected the leafing progress of the Lycium, thereby reducing psyllid populations. Potato psyllid populations were much lower at all locations this year. Two locations showed a few eggs. Eggs were absent at all other locations. This is not normal, as eggs usually are found in larger numbers at most locations.

Boll Weevil

The usual boll weevil hibernation survey was conducted in the principal cotton states. The debris collected was again delivered to the Experiment Stations at Florence, South Carolina, and Stoneville, Mississippi.

The boll weevil was first noted in the Presidio, Texas, section of the Big Bend Region in 1953, according to the best records available. Since that time the boll weevil has built up in numbers to become the major economic pest in the Presidio-Ojinaga area.

The Entomology Department of Texas A. & M. College carried out a late season, adult weevil control experiment in the Redford section, some 16 miles southeast of Presidio, during the fall of 1959. Limited surveys

during the cotton growing seasons of 1959 and 1960 indicated that the boll weevil was spreading northward from the Presidio section.

Discussions on the merits of a suppression program began in the spring of 1961. A coordination committee composed of industry, Plant Pest Control, and Research was set up at the Washington level. This committee drafted a tentative proposal which was carefully reviewed, rewritten, and distributed as an action guideline for all concerned, at a meeting in San Antonio, Texas, on July 18, 1961. The project was a cooperative effort between the USDA Plant Pest Control Division, the Entomology Research Division, Mexico Defensa Agricola, the National Cotton Council, Texas A. & M. College, Texas Department of Agriculture, and cotton farmers in the areas treated. Aerial applications of methyl parathion were made at approximately 14-day intervals. The fourth and last application contained, in addition to the 1/2 pound of actual methyl parathion, one pint (3/4 pound actual) of "Def" (S, S, S - tributylphosphorothrithioate) as a defoliant, applied in a total mixture of 5 gallons per acre. Due to the lateness of the season and regrowth of cotton plants, the defoliant gave only sporadic results as a defoliator, but observations indicated that a slight residual kill of emerging weevils was obtained from the application as compared to the three earlier applications. No injury by the defoliant to adjacent crops was reported.

Originally it was agreed that the treated area would be from Ruidosa (Presidio County) to the Moody Bennett farm, approximately 90 miles upriver, northwest of Presidio, Texas, and the corresponding area in Mexico. As the treatments progressed and surveys indicated movement or presence of adult weevils upriver, the area was extended to include the newly infested areas. The last two applications included up to and through the El Cuervo section of Mexico (approximately 90 miles southeast of El Paso), some 65 miles northwest of the Moody Bennett farm. Treatment began on September 19, 1961, and the fourth and last treatment was completed November 7, 1961. There were 2,454 acres in the United States and 5,634 acres in Mexico, or 8,088 aggregate acres, treated in this program.

During the Big Bend treating program a small acreage was found infested near El Paso. Due to its isolation from the Big Bend infestation, it was deemed advisable not to initiate a spray program for this acreage. Cotton growers in the El Paso section, along with private industry, undertook the responsibility of treating this acreage starting September 20, 1961. A total of 122 acres was treated from one to five times with the insecticide "Sevin."

As of January 23, 1962, the boll weevil hibernation survey began in the Big Bend section in the area treated in the fall. Surface material was collected at sites suggested by Dr. Cross, of Entomology Research Division. The survey was completed January 31. On the United States side 121 square yards on 12 properties were examined and 12 boll weevils were collected.

A special boll weevil meeting was held in El Paso on March 5, 1962, attended mainly by State and Federal groups who participated in the boll weevil experiment in the Big Bend section in the fall. At a meeting on March 7, representatives of the cotton industry from California and Arizona expressed a desire to halt the boll weevil movement westward.

Beginning May 14, an adult boll weevil survey was initiated in the Big Bend section of Texas and Mexico. A school of procedure concerning the survey was held at Presidio on May 10 and 11. The method of inspection in each field consisted of the examination of all the growing cotton in 100 steps in four locations within each given field. The fields to be inspected on both sides of the river were zoned and numbered. The surveys were continued to the close of the fiscal year, with some punctured squares being found in the treated area, as well as in the untreated, indicating the need for consideration of an aerial spray program in the fall.

Cuban May Beetle

Survey for Cuban May beetle was conducted cooperatively with the Division of Plant Industry of the Florida Department of Agriculture, and the State Agricultural Experiment Station. Twenty-four European Chafer light traps were made available by Plant Pest Control Division. These traps were placed in strategic areas in Dade County and operated through the adult emergence season. Numerous catches of Cuban May beetle were made in traps normally set for Japanese beetle, and occasional catches of Cuban May beetle were reported in plastic Steiner traps baited with trimedlure, and the mixture of cue-lure and methyl eugenol.

There was an increase in the infested area over last year which had not been fully delineated at the close of the year. Suppressive treatments were applied to the preferred hosts, including Trema mollis, at the Miami International Airport and environs. Six weekly treatments were applied during the peak emergence season beginning April 30. Treatments consisted of complete wetting of foliage with DDT spray, mixed at a rate of 2 quarts of 25-percent emulsifiable concentrate in 100 gallons of water. Followup survey indicated that the adult beetle population was greatly reduced. Work on this program was terminated the middle of June due to the urgent nature of the program for eradication of the Mediterranean fruit fly.

Experiments by Dr. Wolfenbarger of the Florida Agricultural Experiment Station at Homestead are currently under way to give us better information on life history, feeding habits, larvicides, and economic importance.

Black light traps in operation at New Orleans, Louisiana, and Dallas and Houston, Texas, were checked with particular reference to Cuban May beetle, but all results were negative.

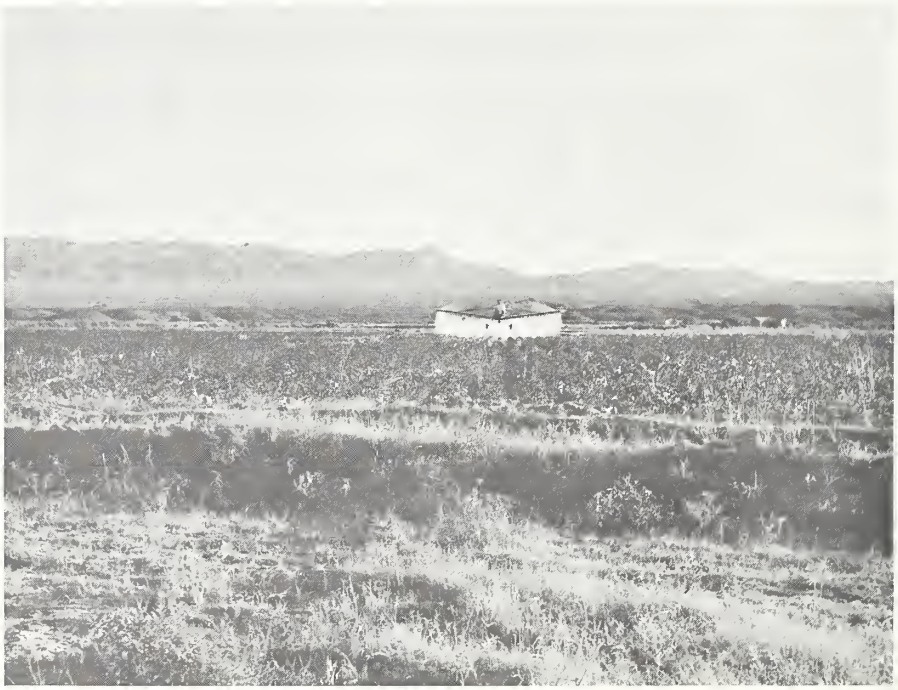
Following is a chart showing the survey programs conducted in each of the states of the Southern Region.

	Alabama	Arkansas	Florida	Georgia	Louisiana	Mississippi	North Carolina	Oklahoma	South Carolina	Tennessee	Texas
Beet Leafhopper											X
Boll Weevil						X	X		X		X
Chinch Bug		X						X			
Citrus Blackfly											X
Cooperative Economic Insect Survey	X	X	X	X			X	X			X
Cuban May Beetle			X		X						X
European Chafer	X		X				X		X	X	
Golden Nematode	X										X
Grasshopper								X			X
Gypsy Moth		X		X		X		X		X	
Hoja Blanca		X	X		X	X					X
Khapra Beetle	X	X	X	X	X	X	X	X	X	X	X
*Mediterranean Fruit Fly	X		X	X	X	X			X		X
Potato Psyllid											X

*Ordinarily, this is a survey program only, but since infestation was found in late June, control and regulatory operations were begun in the closing days of the fiscal year.



Treating cotton field at Candelaria



Treating cotton field with Piper Pawnee aircraft



Trash machine used to collect hibernating boll weevils



Collecting boll weevils in a Mexican cotton field

MECHANICAL DEVICES USED FOR SURVEY



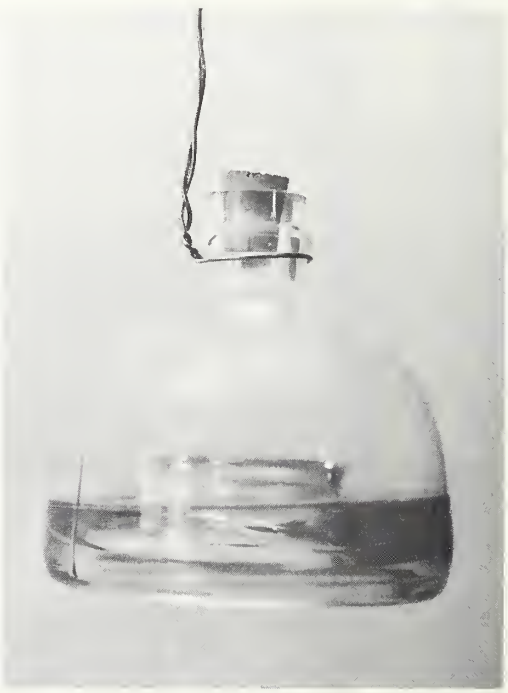
JAPANESE BEETLE TRAP - Also effective for Cuban May beetle, European chafer, and other insects.



GYPSY MOTH TRAP - Uses a synthetic sex lure and tanglefoot.



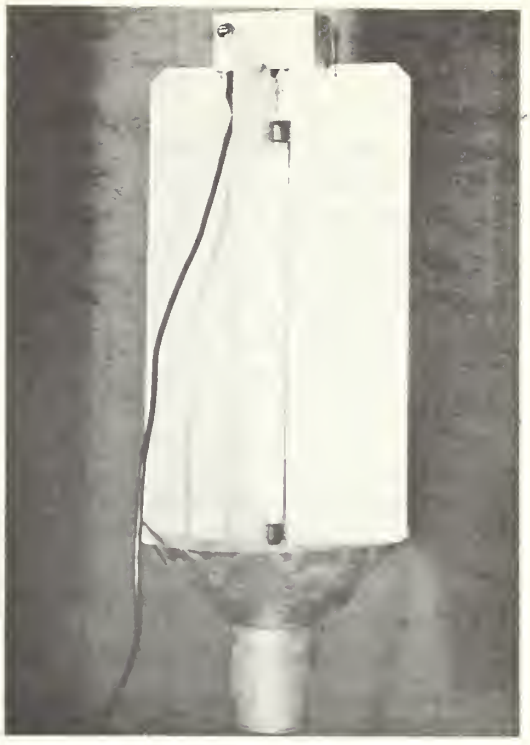
STEINER TRAP - Developed since 1955. Effective for Mediterranean and four other fruit flies.



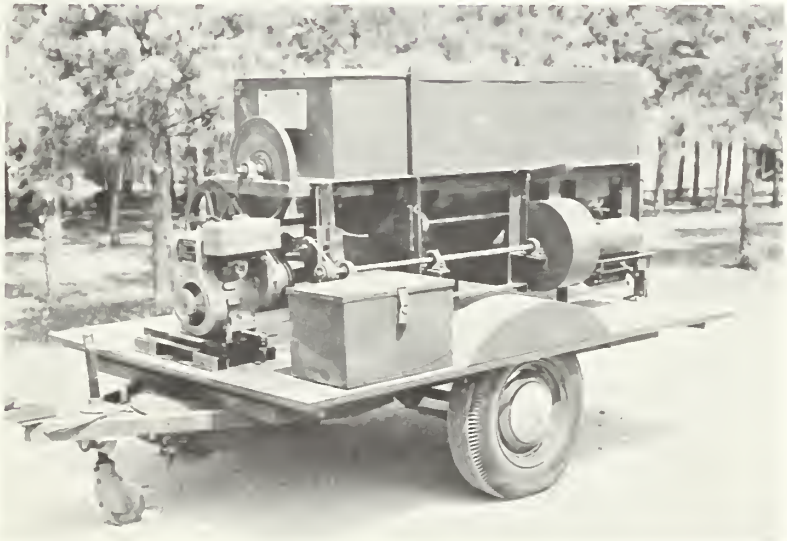
McPHAIL TRAP - Is used over much of the southern half of the United States for Mexican fruit fly and detection purposes.



STICKY-BOARD TRAP - For the survey of vectors of the phony peach disease and other flying insects.



EUROPEAN CHAFER TRAP - A variation of the 15W black light trap which has been used for many years for insect detection.



GIN TRASH MACHINE - The most effective tool available for detecting low populations of pink bollworm. It separates the larval form from trash collected from cotton gins by a process of agitation, screening, and winnowing. It also separates similar larval and some adult forms, particularly the boll weevil.

EUROPEAN CHAFER

Eighteen black light traps were operated primarily for European chafer in four southern states. Three of these were located in Arkansas, 7 in North Carolina, 3 in South Carolina, and 5 in Tennessee. In addition to this, all persons operating other black light traps were reminded early in the spring to make particular observations for European chafer during the period when flight might be expected in the area in question. It is believed that a large amount of European chafer survey was conducted in this manner but not recorded. Available information does not show that any one area in this Region could be considered more susceptible to infestation than another. This survey will be conducted as a detection measure, with especial reference to seaports, airports, and other probable points of introduction.

GYPSY MOTH

The development of a low-cost gypsy moth trap made it feasible to conduct detection surveys in parts of the Region and at the same time provide a degree of training for field personnel in surveying for this pest. A few traps were operated in North Carolina and eastern Tennessee last fiscal year. This work was expanded this year, and 61 traps were used in Arkansas, 47 in Georgia, 46 in Mississippi, and 49 in Tennessee. Field men were given training in the operation and maintenance of these traps, and the work was conducted in conjunction with other programs. It was found, especially in Tennessee, that this work could be carried on quite well in conjunction with Japanese beetle trapping. Results were negative, but the fact that one trapper recovered a tussock moth indicates that the quality of the work, at least in this case, was up to par.

It is planned to continue and expand this work into other states as time permits in the future.

GOLDEN NEMATODE

Golden nematode surveys have been conducted in the Region for several years, beginning about 1949. Sufficient grader surveys have been carried on in the principal potato-producing areas to indicate that no extensive infestations are present. Intense surveys were made of a potato test area at Hastings, Florida, and all indicate no infestation present. The only area in the Region that is considered hazardous is the Rio Grande Valley of Texas. The indicated presence of golden nematode infestation in Mexico makes it important that we conduct intense grader surveys in potato-growing sections and symptom surveys in tomato-growing sections in this area.

There is a good distribution of personnel and equipment throughout the Region which will enable us to carry on a low intensity detection survey routinely, and to rapidly increase this should any infestation be found. In addition, particular attention is given to soil samples collected on the soybean cyst nematode survey in areas where potatoes also are grown. This accounts for the large acreage surveyed in Alabama and South Carolina.

Table 6.--Golden Nematode Program, Survey Activities, Fiscal Year 1962

State	Surveyed		Number samples collected	Number positive specimens	Infested	
	Number properties	Number acres			Number properties	Number acres
Alabama	563	16,578	887	...		
Florida	20	500	20	...		
Georgia	3	160	3	...		
N. Carolina	7	84	36	...		
S. Carolina	45	6,000	175	...		
Total	638	23,322	1,121	...		

Hoja blanca, a virus disease of rice, was first found in the United States near Belle Glade, Florida, in 1957. This disease is apparently a native of South and Central American countries, having been first reported from Panama in 1952. It is now known to occur in most of the countries in Central America; Colombia, Venezuela, and Surinam; in the Dominican Republic; and in Cuba. The principal vector of hoja blanca is one of the plant hoppers, Sogata orizicola Muir.

Following the find near Belle Glade in 1957, the disease was later discovered near Bay St. Louis, Mississippi, in Hancock County in 1958, in Harrison County, Mississippi, in 1959, and also, in several of the rice growing parishes of south Louisiana in 1959.

In cooperation with the Plant Pest Control organizations of the three states, eradication measures were instigated in all of the affected area, control measures being directed against the vector of this disease. Surveys throughout the rice growing area of the South for both the disease and the vector were negative in 1960, 1961, and the first half of 1962.

Sogata orizicola is not believed to overwinter in the United States. It may come in on the wind currents from areas to the south where climatic conditions are more favorable for its survival. If the rice industry of this country is to be protected from losses by this serious disease, constant vigilance for its vector is necessary.



Table 7.--Hoja Blanca Program, Survey Activities, Fiscal Year 1962

State	Surveyed		Infested	
	Number properties	Number acres	Number properties	Number acres
Arkansas	123	11,525	...	...
Florida	12	321	...	...
Georgia	7	15	...	...
Louisiana	949	118,784	...	...
Mississippi	36	5,815	...	...
S. Carolina	5	203	...	...
Texas	193	35,707	...	...
Total	1,325	172,370	...	...

KHAPRA BEETLE

Khapra beetle surveys were conducted in all states of the Southern Region, mostly in connection with duties performed on other programs. Since the khapra beetle is the most destructive known pest of stored grain, it is important that continued vigilance be exercised in order that infestations can be discovered in the incipient stage and eradicated before the pest becomes established and disseminated to other areas. During this fiscal year, surveys were made of feed and seed stores and warehouses, grain handling and storage establishments, feed storage areas of dairy and poultry farms, railroad cars, and other places of potential hazard. Federal and State personnel have cooperated in this work.

The survey in Texas was more intense than that conducted in other states of the Region and included the inspection of 2,708 properties in 194 counties. The most intensive survey was made in the El Paso section, starting February 14, 1962, with 11 State and 8 PPC inspectors. The survey ended March 6, 1962, with negative findings. The competence of State and Federal personnel assigned to this work contributed to the very successful survey. During the fiscal year, 975 properties were inspected in El Paso County, where the original infestation was found in 1959.

Excellent interagency cooperation was demonstrated when Plant Quarantine officials at Tampa, Florida, called the Plant Pest Control Division inspector in that area to observe, prior to fumigation, a heavy khapra beetle infestation of rice in ship stores on a ship from Korea.

Interceptions of live khapra beetles by Plant Quarantine inspectors on ships in port at Brownsville and Houston, Texas, were reported on several occasions. In each instance, the infested material or stores were fumigated under the supervision of Plant Quarantine inspectors. Rice mills in Houston and El Campo, Texas, were inspected, with negative results, after Plant Quarantine inspectors, during a routine ship inspection, found khapra beetle in packaged rice which originated at one of the plants. Also, as a precautionary measure, a guar plant in Karnes County, Texas, fumigated all seed and guar gum received through the port of Houston.

At the close of the fiscal year, there were no known infestations of the khapra beetle in the Region.

Table 8.--Khapra Beetle Program, Survey Activities, Fiscal Year 1962

State	Surveyed			Infested	
	Number properties			Number properties	Number cubic feet
	Initial	Repeat	Total		
Alabama	...	...	105	...	...
Arkansas	...	...	315	...	...
Florida	...	...	79	...	...
Georgia	...	...	9	...	...
Louisiana	...	...	214	...	...
Mississippi	...	...	299	...	...
N. Carolina	...	...	83	...	...
Oklahoma	...	...	168	...	...
S. Carolina	...	...	88	...	...
Tennessee	...	...	78	...	...
Texas	...	...	2,708	...	...
Total	...	...	4,146	...	...

The adult grasshopper survey began in the northwestern part of the Region in July and was completed in August 1961. The area surveyed covered 160 counties in Texas and Oklahoma. Abundance and distribution of the adult population resulted in approximately three-quarters of a million acres of rangeland being considered as potential for economic infestations during the spring of 1962. Limited egg survey in late fall failed to indicate any change in the overall picture, even though some light migrations had occurred.

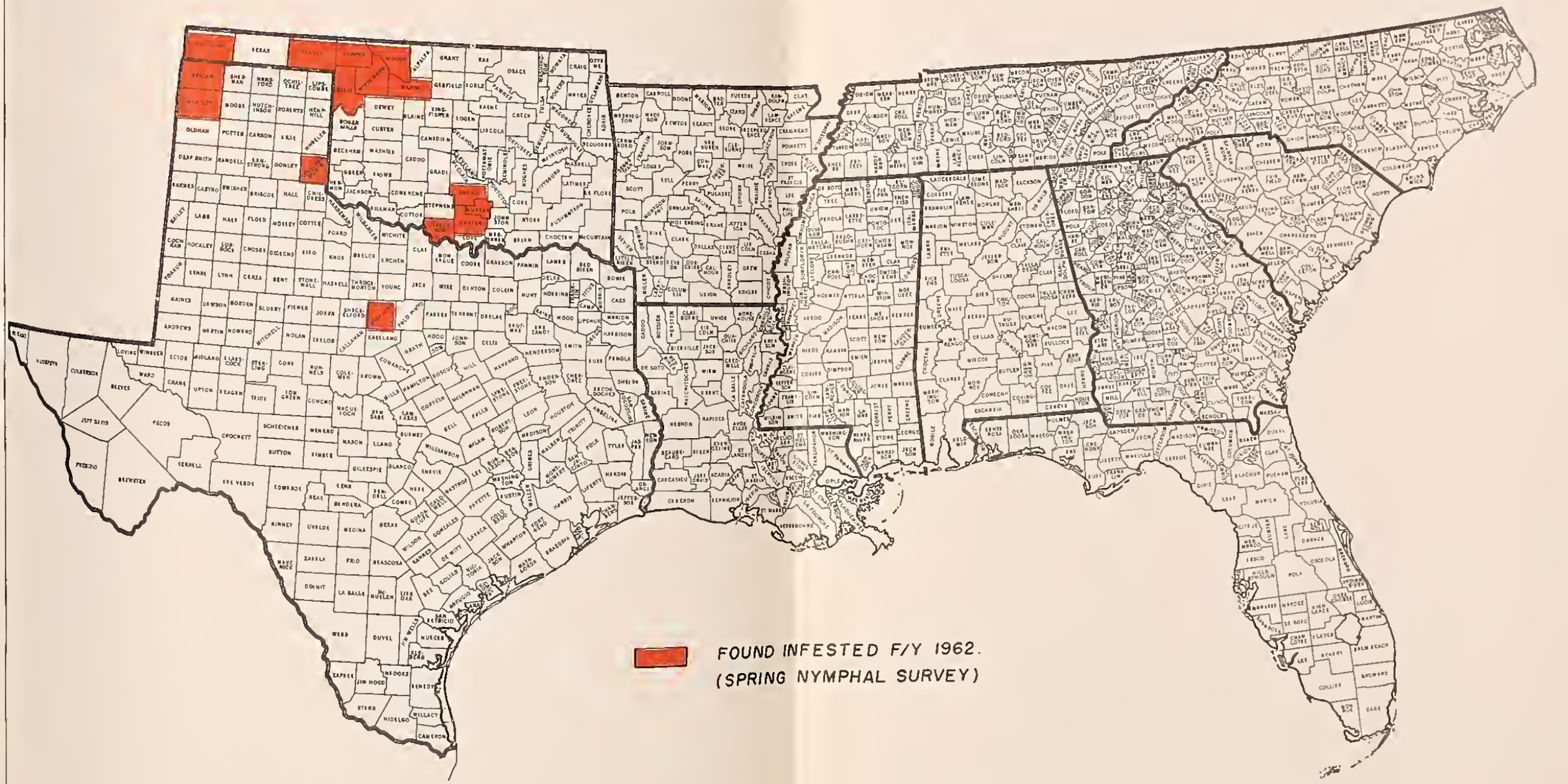
General hatch of eggs occurred in early May 1962, at which time intensive nymphal survey was begun. Re-examination of the areas indicated that only 138,500 acres of private range and 10,000 acres of Forest Service lands in Texas were economically infested. In Oklahoma, 93,500 acres of private range were so infested.

Spring range conditions in the Texas and Oklahoma Panhandles were rated as "good to excellent," and abundant moisture maintained this condition through June 30. Thus grasshopper populations, even though present in economic numbers, were not high enough to alarm most ranchers, and because of insufficient interest, no organized range control program was initiated. Some voluntary grasshopper control, however, was carried out by individual ranchers. In Oklahoma, 31,000 acres of rangeland were treated by individual owners.

At the close of the fiscal year, the range acreage with moderate or higher infestations was distributed throughout 11 Oklahoma counties and 4 Texas Panhandle counties. The species most commonly found on Oklahoma range were Ageneotettix deorum, Amphitornus coloradus, Philibostroma quadrimaculatum, Aulocara elliotti, Metator pardalinus, and Melanoplus bivittatus; while those on Texas range were Melanoplus occidentalis, Metator pardalinus, Aulocara elliotti, and Cordillacris sp. Specimens of Dissosteira longipennis were noted at 52 locations in 22 Texas counties, as compared to 67 locations in 23 counties in 1960, and 42 locations in 15 counties in 1959.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

GRASSHOPPER



FOUND INFESTED F/Y 1962.
(SPRING NYMPHAL SURVEY)

IMPORTED FIRE ANT

The fiscal year 1962 was one of the best and most encouraging years in the operation of this program since its inception. Two of the states, Alabama and Mississippi, which had withdrawn active financial support from the program, obtained appropriations during the year for cooperative control work. Although these appropriations were far less than the amounts needed, they do indicate a reversal of thinking on the part of the legislative groups in the two states, and to a degree they reflect an intensified interest in the program on the part of the people. Also, claims and counterclaims by Wildlife groups and others were at their lowest ebb in the history of this work.

There are several reasons, apparently, for these happenings. Among them is the fact that in many places the imported fire ants are increasing their populations, particularly in a number of cities and towns near the periphery of the infestation, and they are thereby becoming more and more of a nuisance and an economic problem to more and more people. Another reason, probably of equal significance, is the fact that the 1/4-pound treatment of heptachlor is almost a specific treatment for imported fire ants, and Wildlife groups and others are finding little or nothing to complain about where these light applications are being made.

During the year surveys were made in all the states of the Southern Region, and infestations were found in 17 counties not previously known to support infestations of imported fire ants. Of the 17 counties found to be infested for the first time, 1 was in Florida, 4 in Georgia, 6 in Louisiana, 3 in Mississippi, 1 in South Carolina, and 2 in Texas. For the most part, these were small incipient infestations and were treated in their entirety immediately.

This year treatment was applied to a total of 974,104 acres, of which 141,475 acres were treated with ground equipment and 832,629 by airplane. This year, for the first time, airplanes were used rather extensively for the application of imported fire ant insecticides in the State of Mississippi, which indicates additional progress in this state, since earlier agreements had been made with certain groups that airplanes would not be used in the Imported Fire Ant Program. Also, during the year, the new Mirex bait was used for the first time on a control basis in all of the states, with the exception of Arkansas and Florida. During the year, 163,388 acres were treated with bait; much of this was in pasture land and on a field test basis. The results everywhere have been most outstanding. The manner in which our people and the general public have accepted this new treatment is indeed gratifying. If the results obtained so far continue, it seems assured that the bait will largely replace insecticides in future control programs.

The Extension Service and Vocational Agricultural groups have cooperated more than ever before in a program designed to create interest in survey, control, and eradication work in outlying areas. The results of this

endeavor have been most encouraging. Not only has there been a decrease in manpower required for survey in some of the outlying infestations, but infestations have been located that might otherwise have gone undetected for some time. In addition, it seems that this type of work has reduced to a great extent the complaints that sometimes come from treatment of lightly infested areas.

One of the chief problems encountered since the adoption of the 1/4-pound treatment has been associated with residues and the necessity of flagging out pastures and vegetable cropland, which left a reservoir of infestation to contaminate the treated areas. The new bait has been used extensively to treat these flagged-out areas and thus remove these sources of recontamination, thereby adding considerably to the overall effectiveness of the program.



The imported fire ant is an economic pest, a hazard and nuisance to people in all walks of life. In the areas that it infests, its unsightly mounds are found everywhere; its presence in fields and orchards often makes harvest difficult and unpleasant.





Each year hundreds of people in the infested areas are treated for the venomous sting of this insect. Hospital cases are not uncommon. In some instances its attack has proved fatal. In one year at a single southern army post over 300 people were treated because of imported fire ant stings.





Table 9.--Imported Fire Ant Program, Survey and Control Activities, Fiscal Year 1962

State	Survey and detection				Control			
	Surveyed		Infested		Acres treated with insecticide			
	Number properties	Number acres	Number properties	Number acres	Chemical		Bait	
					Ground	Air	Ground	Air
Alabama	4,993	...	390	29,869	6,792	33,666	...	5,910
Arkansas	12,555	...	11	26,352	190	21,600	...	...
Florida	16,523	...	646	348,122	1,343	...	...	...
Georgia	15,999	...	5,655	1,693,895	4,639	377,386	40	95,246
Louisiana	41,026	2,119,420	27,842	1,357,412	26,904	215,341	90	21,105
Mississippi	11,282	...	937	454,216	57,578	...	97	21,370
N. Carolina	37,363	...	600	9,000	4,992	...	2,008	...
Oklahoma	222	...	...	...	...	...	...	...
S. Carolina	34,140	...	1,517	173,836	5,436	15,960	197	15,950
Tennessee	9,609	...	...	...	...	...	...	...
Texas	13,497	...	...	58,177	31,169	7,720	...	1,375
Total	197,209	2,119,420	37,598	4,150,879	139,043	671,673	2,432	160,956

Table 10.--Imported Fire Ant Program, Regulatory Activities, Fiscal Year 1962

State	Inspection for certification							A. treated for certif. purposes	Commodity treatment			
	No. props.	Acres		Proc. plant visits	Ship. point visits	Indus. site visits	Other		Lots serviced			
		Nursery	Other					Soil	Fumigated	Dipped	Heated	Other
Alabama	1,358	7,099	8,419	11	111	51	5,608	13,235	90	30	19,484	630
Florida	1,930	1,235	35,759	234	874	332	36	2,108	8	...	...	10
Georgia	73	945	229	...	5	3	...	1,731	1,147	942	548	1,829
Louisiana	598	7,708	318	4	2	50	...	2,456	5	32	...	5
Mississippi	788	1,903	943	23	106	293	251	753	107	87	...	9,242
S. Carolina	13	105	...	...	...	...	...	...	...	...	...	...
Texas	762	2,678	7	...	...	5	32	228	...	...	...	6
Total	5,522	21,673	45,675	272	1,098	734	5,927	20,511	1,357	1,091	20,032	11,722

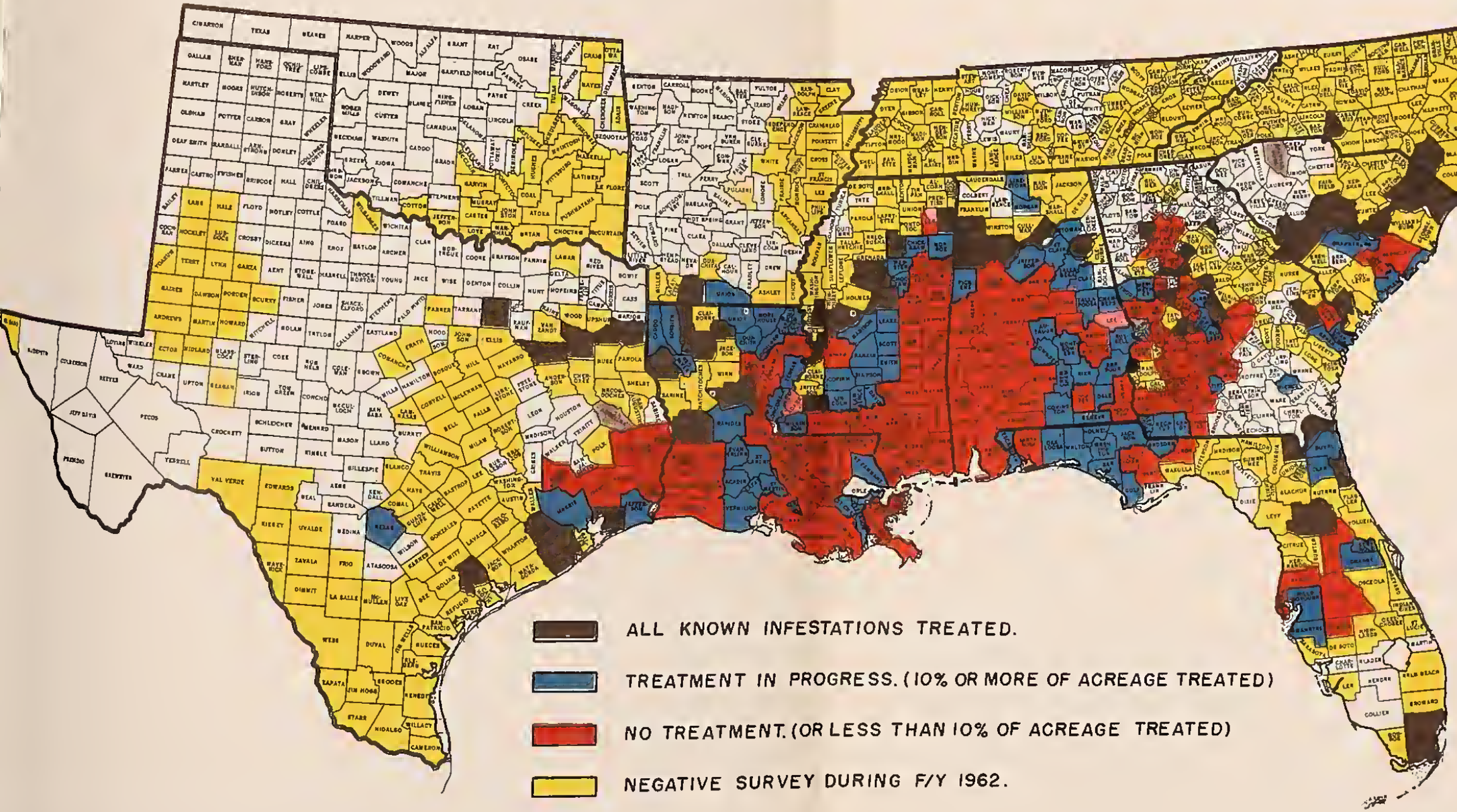
Table 11.--Imported Fire Ant, Status of Program, June 30, 1962

State	Estimated acres found infested from beginning of program	Acres treated		Estimated acres remaining to be treated*
		Complete treatment from beginning of program through 6-30-62	First application only of two-application treatment	
Alabama	11,359,202	545,013	...	10,814,189
Arkansas	84,679	76,679	6,278	8,000
Florida	2,065,670	282,700	...	1,782,970
Georgia	4,428,528	1,276,851	172,079	3,151,677
Louisiana	6,815,847	1,023,826	142,739	5,792,021
Mississippi	5,162,941	245,878	21,697	4,917,063
N. Carolina	21,146	19,146	...	2,000
S. Carolina	219,148	67,855	40,020	151,293
Texas	1,401,022	164,533	22,030	1,236,489
Total	31,558,183	3,702,481	404,843	27,855,702

*Includes acres which have received no treatment, and those which have received the first application only of the two-application treatment.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

IMPORTED FIRE ANT



JAPANESE BEETLE

Trapping operations for the Japanese beetle were carried out in every state within the Region, and supplementary surveys were conducted in most states in the form of visual inspection of selected locations and inspection of aircraft originating at airports which were declared hazardous as a result of their proximity to heavily infested areas. These surveys resulted in the finding of infestations for the first time in three counties in Georgia, two in North Carolina, and two in Tennessee. Positive specimens were found in three counties in South Carolina and three counties in Tennessee, not known to be infested, and in one county in each of the noninfested states of Alabama and Florida; however, conditions under which these specimens were collected did not indicate established infestations. Additional survey will be conducted at these locations.

In the infested areas, populations continued to increase in the western counties of North Carolina, with Ashe and Watauga Counties sustaining extremely heavy damage. In Tennessee, increases in infested acreage were noted in several counties, including Johnson, Greene, and Cocke; and a very significant increase of approximately 22,500 infested acres was noted in Loudon County.

As a result of the large increase of infested acres in Tennessee, the State appropriated sufficient funds to match federal and local participation in a control program. This resulted in the largest Japanese beetle campaign ever undertaken in that state. In Georgia, infestations in Bibb, Spalding, and Cobb Counties were treated, and foliage treatments were made in Lumpkin County to reduce adult populations which were causing extensive damage.

In North Carolina, quarantine enforcement was a principal activity. Nursery stock and soil sample shipments were the two groups of commodities most often presented for certification. Soil movements were certified after fumigation; whereas, nursery stock was certified after various treatments, principally insecticide treatments of soil in the growing areas.

The movement of green beans to fresh markets and to canneries required repeated field inspections. Beans from growing areas free of beetles are certified for movement without further treatment; beans grown in infested fields require fumigation. This year, van truck fumigation moved the greatest amount of beans, although walk-in fumigation chambers were used in Ashe and Watauga Counties for small lot shipments of beans.

The farm produce movement from eastern markets has been free of restrictions for the past three years. This summer, however, a slight increase in the number of adult beetles was noted during July. In the mountain counties, especially in the two tiers of counties next to the North Carolina-Tennessee state line, the adult beetle population continues to increase. Heavy feeding damage to trees and shrub foliage was observed in a number of mountain counties.

The most recent revision of the Japanese beetle quarantine places the entire state of North Carolina under regulation.

Eleven counties in South Carolina now have established infestations, involving in excess of two million acres. Chemical control of the Japanese beetle has not been tried in this state, as infestations are so well established at present that an effort to suppress or eliminate them with chemicals would be too costly. Quarantine measures will be relied upon to retard further spread.

Table 12.--Japanese Beetle Program, Survey and Control Activities, Fiscal Year 1962

State	Survey and detection				Control			
	Surveyed	Traps in use	Number positive specimens	Infested	Acres treated			
	Number acres			Number acres	Insecticide			Biological control
					Ground	Air	Total	
Alabama	180	438	3*	...	...	...	...	...
Arkansas	...	185	...	...	...	...	...	...
Florida	7	217	2*	...	...	...	...	...
Georgia	199	765	11	182,110	11	...	11	...
Louisiana	...	54	...	...	...	...	...	...
Mississippi	597	177	...	...	...	...	...	...
N. Carolina	16,567	120	...	318	2,285	...	2,285	...
Oklahoma	...	67	...	...	...	...	...	...
S. Carolina	14,584	1,211	209	734,505	...	...	...	...
Tennessee	12,144	1,307	185	32,689	7,443	41,279	48,722	...
Texas	25	...	...	...	...	...	...	...
Total	44,303	4,541	410	949,622	9,739	41,279	51,018	...

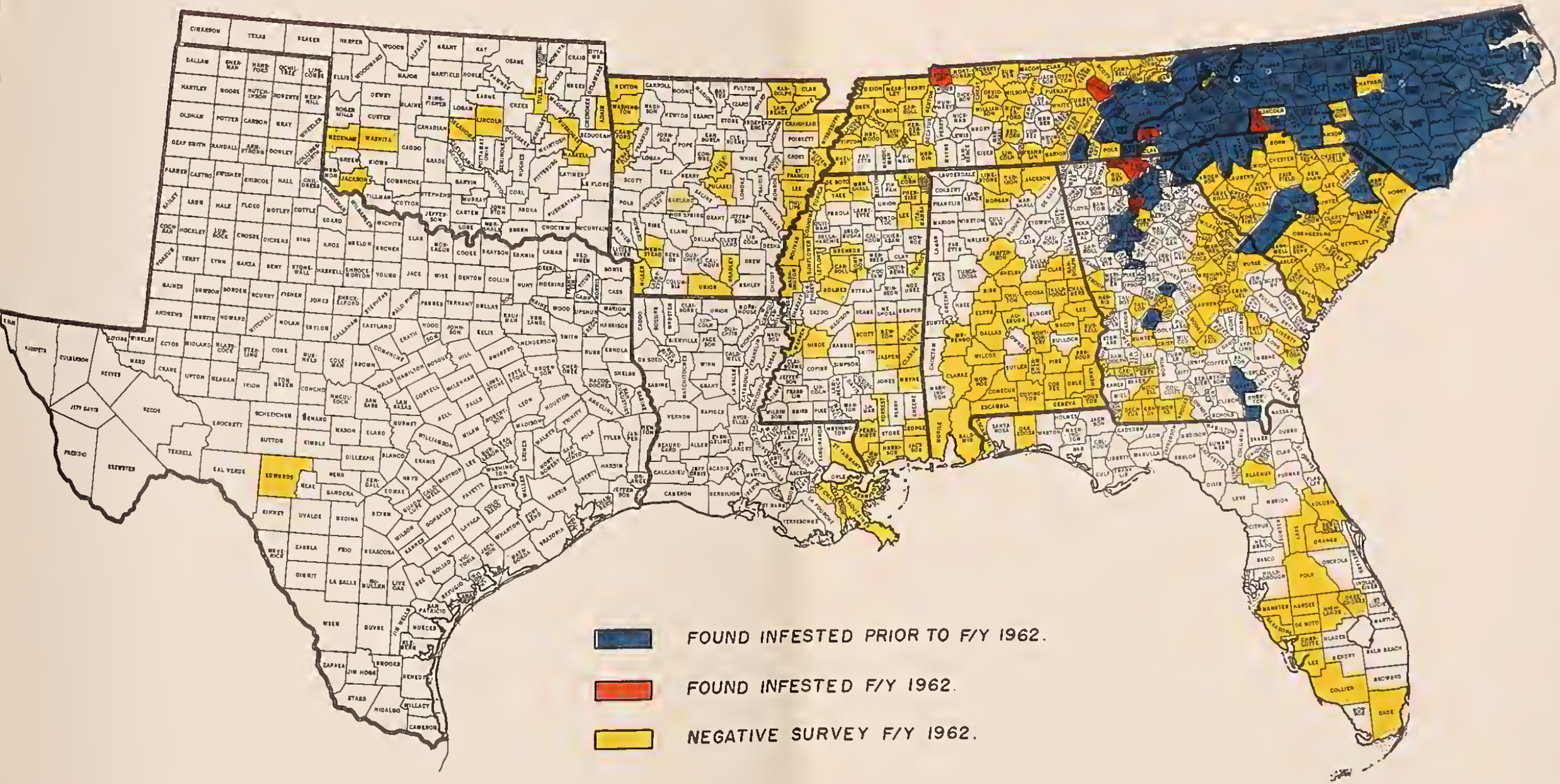
*Survey at these points did not indicate established infestations.

Table 13.--Japanese Beetle Program, Regulatory Activities, Fiscal Year 1962

State	Inspection for certification							Acres treated for certification		Commodity treatment			
	Number properties	Acres		Processing plant visits	Shipping point visits	Industry site visits	Other			Lots serviced			
		Nursery	Other					Soil	Foliage	Fumigated	Dipped	Soaked	Other
Florida	...	...	...	...	...	...	364	...	...	...	...	...	23
Georgia	...	...	...	...	...	...	...	3,563	...	...	...	...	...
Louisiana	2	...	...	...	...	...	48	...	...	...	...	...	...
N. Carolina	1,644	970	9,303	57	1,121	6	1	333	3,716	19,133	68	17,893	128,599
S. Carolina	...	...	...	...	...	...	...	...	...	1	...	...	...
Tennessee	2	...	...	...	...	...	25	1,110	...	...	...	...	...
Total	1,648	970	9,303	57	1,121	6	438	5,006	3,716	19,134	68	17,893	128,622

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

JAPANESE BEETLE



BURROWING NEMATODE

In Florida, the Burrowing Nematode Program, like other Plant Pest Control programs, is conducted on a cooperative state-federal basis. Unlike most programs, however, the duties of the two agencies are more clearly defined. It is the duty of Plant Pest Control to survey, determine the results of the survey, and delimit the infestation. It is the duty of the State to take necessary action to eradicate or confine infestations. In previous years the State attempted to destroy infested citrus trees and to apply DD, as a fumigant, on areas from which trees had been removed. This, however, resulted in a slow-moving program, due mainly to grower objection and lack of sufficient manpower.

Program evaluation just prior to the 1962 fiscal year resulted in a change of plans. The program is now designed to contain infestations and protect adjacent uninfested groves. This is accomplished by placing chemical barrier zones around all infested citrus areas. Ethylene dibromide is used at present to inhibit infestation, and Urox is used as a herbicide to prevent the growth of host plants in the treated barrier areas.

Numerous plants, both citrus and non-citrus, are hosts of burrowing nematodes. All nurseries in known infested areas were carefully inspected and appropriate measures were taken to prevent spread from these sources.

Following is a summary of the work accomplished in Florida during fiscal year 1962.

BARRIERS

Areas Completed	110
Properties Involved	584
Acres Surveyed	12,493,90
Acres Inside Barriers	2,955.37

PUSH-and-TREAT

Properties Surveyed	131
Acres Surveyed	3,033.25
Acres to be Pushed & Treated	281.28

MARGINS

Properties Surveyed	152
Acres Surveyed	4,011
Properties Found Negative	118
Properties Found Positive	37

REPLANTS

Properties Surveyed	80
Acres Surveyed	1,363.5
Trees Sampled	52,247
Properties Found Negative	50
Properties Found Positive	30

NURSERIES

CITRUS

Nurseries Surveyed	163
Acres Surveyed	376.24
Nurseries Found Negative	152
Nurseries Found Positive	11

ORNAMENTAL

Nurseries Surveyed	90
Acres Surveyed	382.31
Nurseries Found Negative	60
Nurseries Found Positive	30

PEACH

Nurseries Surveyed	3
Acres Surveyed	1.75
Nurseries Found Negative	1
Nurseries Found Positive	2

NURSERY SITES

Sites Surveyed	110
Acres Surveyed	474.6
Sites Found Negative	109
Sites Found Positive	1

In addition to the above, occasional detection surveys are made throughout the citrus growing areas for symptoms.

Burrowing nematodes were first found in Texas just prior to the 1962 fiscal year. The state-federal cooperative program in Texas differs from the one in Florida in that both agencies participate in all phases of the activity. Actually, the State has taken the initiative and Plant Pest Control has given as much assistance as possible.

Five infestations were discovered in Texas. Most of them were in bench, pot, or ground beds in nurseries. One of the infestations was found in Ellis County, near Dallas, and the remainder were found in the lower Rio Grande Valley area. The infested areas are small, and all except one have been fumigated with methyl bromide, using plasticated nylon tarpaulins to form a surface seal. The untreated nursery is under state quarantine.



Burrowing nematode inside feeder root.



Nematode-infested grove. Note heavier foliage on healthy trees in background.

Table 14.--Burrowing Nematode Program Survey and Control Activities, Fiscal Year 1962

State	Survey and detection					Control		
	Surveyed		Number samples collected	Infested		Number properties	Acres treated	
	Number properties	Number acres		Number properties	Number acres		Fumigation	Mechanical
Florida	2,569	43,488	124,790	297	407	170	621	...
Texas	17	82	278	5	14	1	2	...
Total	2,586	43,570	125,068	302	421	171	623	...

Table 15.--Burrowing Nematode Program, Regulatory Activities, Fiscal Year 1962

State	Number of properties	Inspection for certification Nursery acres	Commodity treatment Lots nursery stock heated
Florida	479	1,197	8,378
Total	479	1,197	8,378

SOYBEAN CYST NEMATODE

This program is unlike others in the Region because, as yet, it has not been possible to develop a practical control or eradication treatment. Various chemicals and crop practices are capable of causing drastic reduction in soybean cyst nematode populations but the reproduction potential of this pest is so great that only a few left in the soil are capable of regaining normal or above normal population in a single season. Studies are being conducted by cooperating state and federal research and development agencies in an attempt to develop usable treatments for control and eradication purposes.

Progress has been made in the development of resistant soybeans. One or more varieties are highly resistant to soybean cyst nematodes, but these are basically black beans and are not popular in the soybean oil industry. Crosses with popular cream colored beans appear promising and, if the objectionable off-color tendency can be overcome, it is likely that resistant strains may solve the nematode problem.

The program as it now exists consists primarily of extensive surveys in order to delimit infestations. During the fiscal year, 35,286 properties, containing 1,217,518 acres, have been surveyed in 9 states. Examination of 18,490 soil samples revealed 93 new infestations, involving 3,686 acres. Some of these new infestations were discovered in areas known to be generally infested; some were found in new counties or civil districts.

The second important phase of the program consists of regulating the conditioning and movement of commodities likely to spread infestation. The conditioning phase involves the regulation of crop harvesting in order to prevent contamination from infested soil, washing and movement of vegetables to designated processing plants, or very thorough surveys of land in which commercial vegetable plants are to be grown. Approved treatments, also, are used to prevent spread. Heat or methyl bromide fumigation is used in connection with the movement of many commodities. High pressure washing or compressed air is used extensively to remove all soil that may contain nematodes from earthmoving industrial or farm equipment and other objects, of any nature, that may be contaminated. During the fiscal year, 118 lots of commodities were fumigated and 335 units were cleaned and certified for movement.



A soybean field damaged by the soybean cyst nematode.



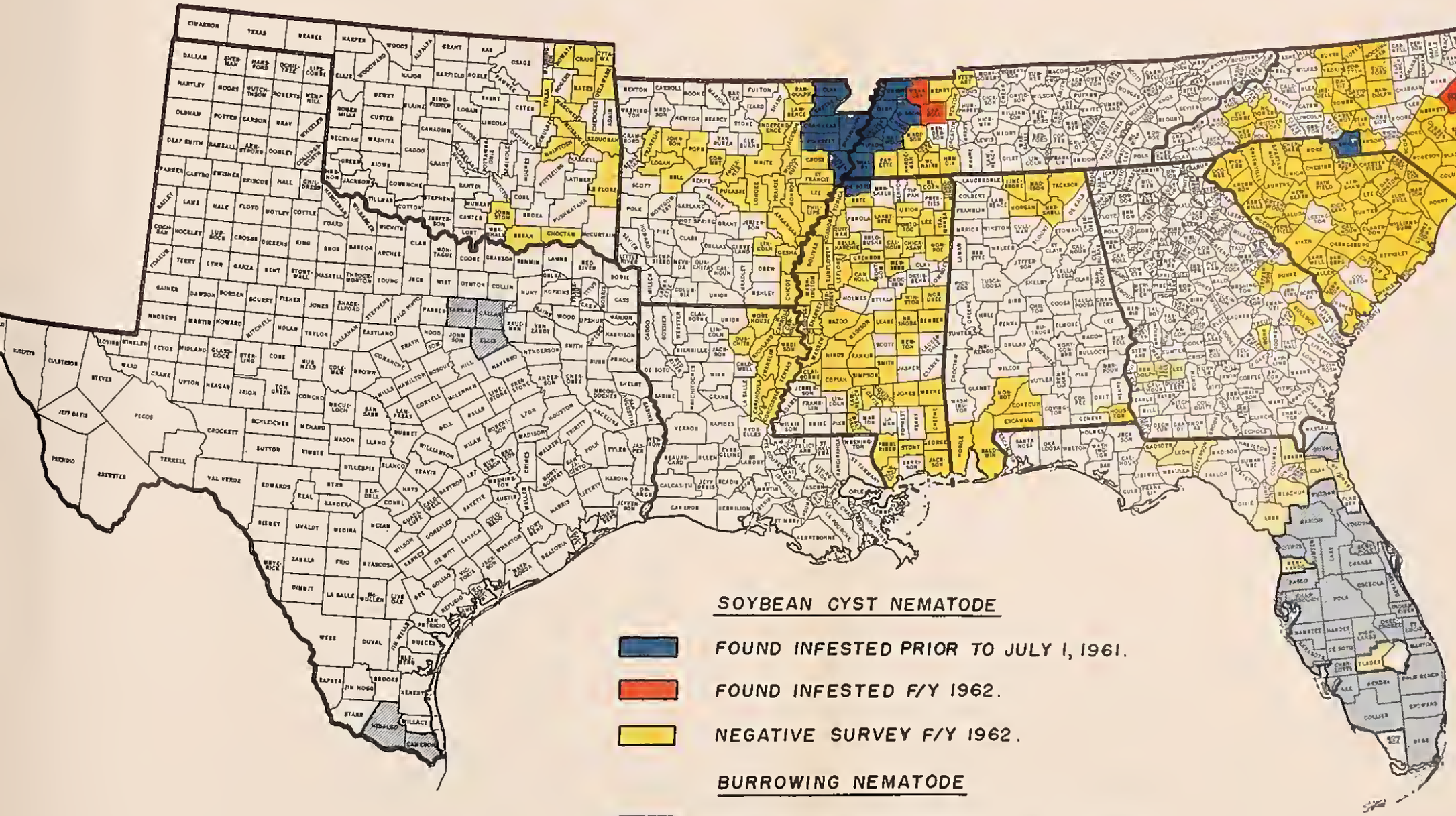
Young soybean plants killed by soybean cyst nematodes.

Table 16.--Soybean Cyst Nematode Program, Survey and Regulatory Activities, Fiscal Year 1962

State	Survey and detection					Regulatory						
	Surveyed		No. samples coll.	Infested		Inspection for certification					Commodity treatment	
											Lots serviced	
	No. props.	Acres		No. props.	Acres	No. props.	Acres	Proc. plant visits	Indus. site visits	Other	Fumi-gated	Other
Alabama	794	20,618	543	...	...	...	...	...	...	...	...	...
Arkansas	1,582	78,278	4,160	3	16	51	...	66	...	9	...	103
Georgia	53	2,075	14	...	...	...	...	...	...	...	...	...
Louisiana	590	47,450	360	...	...	...	...	...	...	...	...	...
Mississippi	739	148,370	1,967	...	171	...	...	...	...	...	...	...
N. Carolina	15,753	318,862	4,573	7	68	...	...	...	...	...	...	107
Oklahoma	96	2,295	134	...	...	...	...	...	...	...	...	...
S. Carolina	14,069	437,236	1,250	...	...	...	...	...	...	...	...	...
Tennessee	1,610	162,334	5,489	83	3,431	111	79	41	2	56,733	118	125
Total	35,286	1,217,518	18,490	93	3,686	162	79	107	2	56,742	118	335

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

SOYBEAN CYST NEMATODE - BURROWING NEMATODE



SOYBEAN CYST NEMATODE

FOUND INFESTED PRIOR TO JULY 1, 1961.

FOUND INFESTED F/Y 1962.

NEGATIVE SURVEY F/Y 1962.

BURROWING NEMATODE

FOUND INFESTED PRIOR TO JULY 1, 1961.

NEGATIVE SURVEY F/Y 1962.

PEACH MOSAIC

Peach mosaic, a virus disease of peaches and several other fruits of the peach group, was first recognized in Texas in 1931. The vector of the peach mosaic disease is a microscopic eriophyid mite. The virus also may be transmitted to healthy trees through the use of budwood from infected stock. Infected trees develop mottled and distorted leaves and small, misshapen fruit. There is no known control other than the destruction of infected trees.

In the Southern Region, areas of infestation exist in Arkansas, Oklahoma, and Texas. Surveys were made in these states and 43 infected trees were found and destroyed. Limited inspection was made in other states in connection with the phony peach survey, but no infected trees were found.

Table 17.--Peach Mosaic Program--Survey, Control, and Regulatory Activities, Fiscal Year 1962

State	Survey and detection				Control		Regulatory				
	Surveyed		Infected		Treated		Inspections for certification				Commodity treatments
	Number properties	Number hosts	Number properties	Number hosts	Number properties	Mechanical hosts	Number properties	Acres		Other	Lots serviced Other*
								Nursery	Other		
Arkansas	156	666,490	2	2	2	2	92	52	1,160	364,187	...
Oklahoma	61	575,333	5	8	...	...	144	2,560	2,220	53,600	8
Texas	325	346,880	14	33	13	29	157	211	753	...	4
Total	542	1,588,703	21	43	15	31	393	2,823	4,133	417,787	12

*Diseased trees removed from nurseries and budwood sources and environs.

PHONY PEACH

Phony peach, a destructive virus disease of peaches and plums, is believed to be of native origin and was first observed in Georgia about 1890. The symptoms of the disease are the retarding of twig growth and a reduction in the size and amount of fruit produced. The virus does not cause early death of the tree, but will reduce production of marketable fruit below economic levels. As no symptoms may be visible during the first year of infection, early detection is difficult. The virus is endemic in wild plum present in the peach growing areas and exhibits no visible symptoms in these plants. The vectors of the disease are several of the leafhoppers native to the peach growing areas.

Phony peach disease is found in all the commercial peach producing states of the Southern Region. During fiscal year 1962, surveys were conducted in all states having commercial orchards, and all diseased trees discovered were removed. The incidence of infection is very low in most areas, but due to the adverse market situation for the past three years, some orchards have been neglected. Inspections are made of all nurseries growing peach trees or furnishing budwood, and a herbicide program is in effect to control wild plum thickets in the environs of commercial orchards.

A survey using sticky-board traps was made in several states to determine the prevalence and distribution of the several leafhoppers that act as vectors for the disease.



Two baskets of peaches. The one on the left from trees infected with phony peach disease, the one on the right from a healthy tree. Note contrast in size of fruit.



A healthy peach tree showing normal stem and leaf development.



This peach tree shows the characteristic short stems and rosetted leaf growth of trees infected with the phony peach disease.

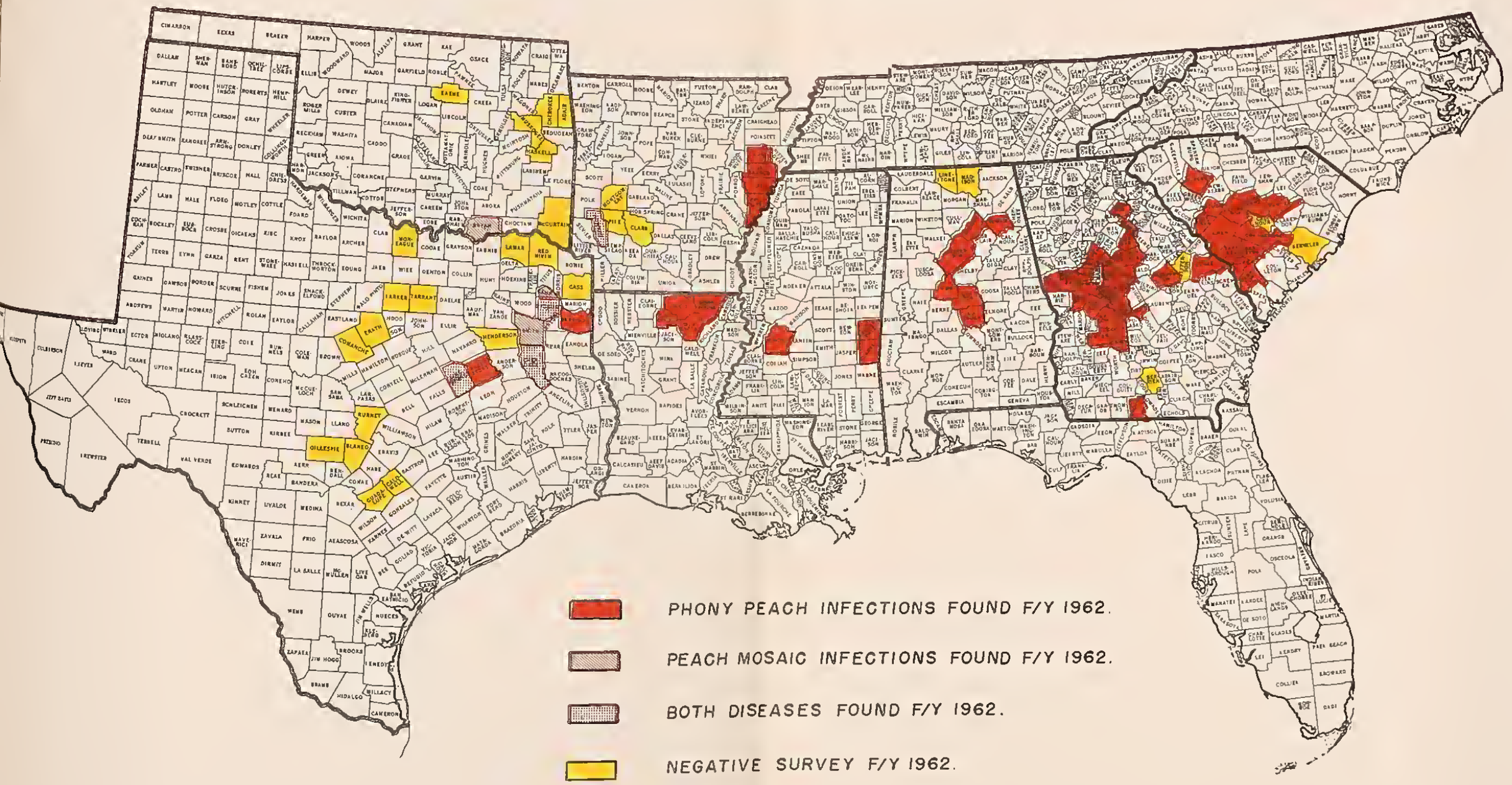
Table 18.--Phony Peach Program--Survey, Control, and Regulatory Activities, Fiscal Year 1962

State	Survey and detection				Control			Regulatory		
	Surveyed		Infected		Treated			Inspections for certification		Commodity treatments
	Number properties	Number hosts	Number properties	Number hosts	Number properties	Mechanical hosts	Herbicide acres	Number properties	Acres nursery	Lots serviced Other*
Alabama	427	884,826	222	1,780	222	1,780	...	...	...	...
Arkansas	193	446,592	16	49	11	44	...	...	...	...
Georgia	311	3,394,830	287	15,230	310	15,230	28	...	...	...
Louisiana	462	129,676	38	714	38	714	...	...	...	...
Mississippi	25	49,071	13	810	29	810	19	...	...	...
S. Carolina	313	1,472,862	74	385	156	385	136	...	...	...
Texas	135	209,643	18	59	18	59	...	35	22	900
Total	1,866	6,587,500	668	19,027	784	19,022	183	35	22	900

*Diseased trees and wild host plants removed from nursery sites and environs.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

PHONY PEACH - PEACH MOSAIC



PHONY PEACH INFECTIONS FOUND F/Y 1962.

PEACH MOSAIC INFECTIONS FOUND F/Y 1962.

BOTH DISEASES FOUND F/Y 1962.

NEGATIVE SURVEY F/Y 1962.

Pink Bollworm

For many years the Pink Bollworm Program has been successful in preventing the spread of pink bollworm to other cotton-growing areas and keeping the population to noneconomic numbers in most of the infested areas.

Pink bollworm populations in the four infested states of Arkansas, Louisiana, Oklahoma, and Texas remained at the lowest level for many years. Inspections were negative in Louisiana for the first time since 1949, and in Arkansas since 1952. Medium infestations were reported in 16 counties in central and north-central Texas, and in Calhoun, Atascosa, and Presidio Counties, and the southern half of Cameron County. This is the lowest population in Texas since the entire state became infested. Inspections in Oklahoma indicate a further decline from the previous two years. The four counties of Comanche, Cotton, Jefferson, and Stephens, in south-central Oklahoma, were classed as medium infestations, 28 light and 7 negative. Intensive surveys by one or more methods of inspection were made in all the principal cotton-growing areas of these four states, most of which were gin trash and lint cleaner.

Gin trash and/or lint cleaner inspections were conducted in the principal cotton-growing areas of Mississippi, Alabama, Tennessee, Georgia, and Florida, with negative results. Limited inspections in North and South Carolina also produced negative results. In many sections, gin trash and lint cleaner inspections were supplemented by bloom and boll inspections.



ROSETTE COTTON BLOOM - Petals of infested blooms are webbed together forming a rosette. Bloom inspection is performed in generally infested areas to determine early emergence of pink bollworm and population buildup later in the season or as a supplement to other methods of inspection.

In the regulated areas having mandatory cultural control, late maturing of the crop and adverse weather delayed the control practices. In Texas and Louisiana, extensions were granted, some on a time limitation and others on an individual basis, depending on the circumstances. In many areas the moisture aided in the decomposition of the plant residues, giving in general a satisfactory stalk destruction. A voluntary cultural control program was recommended again in 21 east Oklahoma counties adjacent to Arkansas. Approximately 97 percent of all fields were cleaned by April 15.

In Louisiana, the regulations were removed from the 10 parishes of Allen, Beauregard, Calcasieu, Cameron, Jackson, Jefferson Davis, Ouachita, Vermilion, Vernon, and Winn; and in Arkansas, from all or parts of the 8 counties of Ashley, Bradley, Calhoun, Cleveland, Drew, Jefferson, Ouachita, and Union.

Regulatory activities consisted primarily of inspection for certification and supervision of commodity treatments in the regulated areas of each state and the adjoining states. Good cooperation in complying with State and Federal requirements was received from all plants processing, shipping, and handling regulated products. Road stations were operated on the main highways leading from Texas and Oklahoma into Arkansas and Louisiana, and at bridges at Natchez, Greenville, and Lula, Mississippi.

Wild Cotton Eradication

The Wild Cotton Eradication Program is operated on the basis of destroying all known wild cotton and ornamental dooryard cotton plants in South Florida. This basis of procedure prevents the potential of heavy pink bollworm population buildups there, which would be a source of spreading infestations to the commercial cotton-producing states in the Southeast.

Each year a large number of bolls, blooms, and squares collected from wild cotton are inspected for pink bollworm. In fiscal year 1962, there was a tremendous increase in pink bollworms recovered over the previous year. One pink bollworm collected in Lee County was the first since 1943. During the year, 186 pink bollworm larvae and pupae were collected. In Dade, Broward, and Monroe Counties, 2,170 okra pods were collected and inspected, with negative results. Hibiscus plants on Plantation Key, previously infested, were kept under observation, but no pink bollworms were found.

Debris left by Hurricane Donna created survey conditions which made it almost impossible to discover and eradicate wild cotton plants at the normal rate with available manpower. Since the hurricane of 1960, large, vigorous cotton plants with much fruit have been found from time to time.

During the year, 18,722 acres were covered, and 10,860 plants were removed.



(Right) Undamaged cotton bolls, showing fluffy, white lint. Boll fully opens. (Left) Cotton bolls severely damaged by pink bollworm, showing stained, nonpickable locks. Boll never fully opens.



Green cotton bolls showing round exit holes cut by pink bollworm when emerging from the boll. Lint is cut and stained by larva in moving from seed to seed and lock to lock, and when emerging.

Table 19.--Pink Bollworm Program, Survey and Control Activities, Fiscal Year 1962

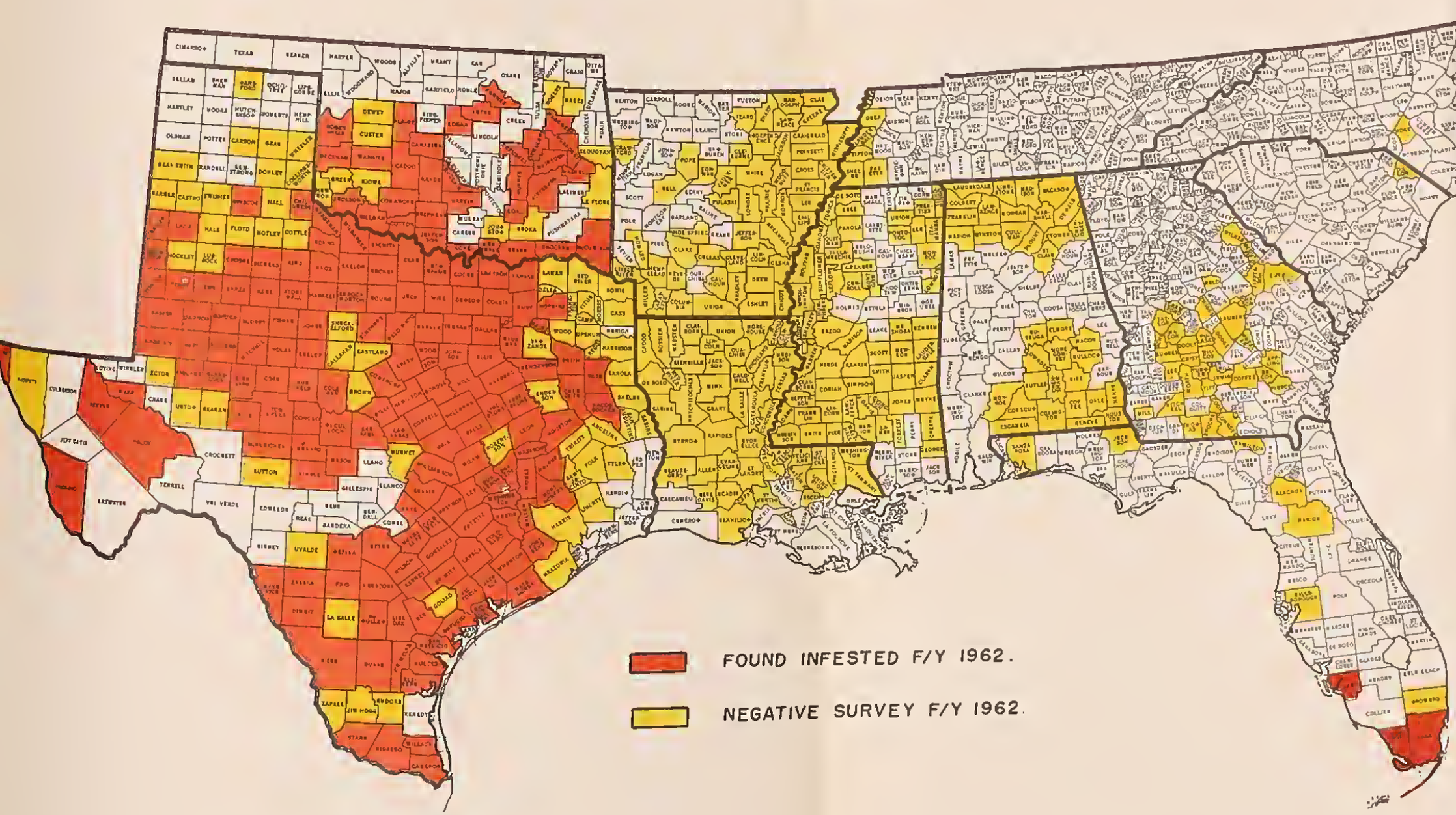
State	Survey and detection						Control		
	Surveyed			Positive specimens	Infested		Acres treated		
	Number properties	Bushels gin trash	Number acres		Number properties	Number acres	Insecticide		Mechanical
							Ground	Air	
Alabama	389	385	6,368	...	...	...	...	...	...
Arkansas	11,752	47,058	292	...	...	...	...	...	1,363,810
Florida	379	695	5,306	209	14	689	15	...	...
Georgia	327	1,817	163,795	...	...	...	...	...	...
Louisiana	477	7,849	49,027	...	...	...	...	...	144,797
Mississippi	644	11,507	6,191	...	...	...	...	...	...
N. Carolina	3	...	60	...	...	...	...	...	...
Oklahoma	493	3,319	816	...	66	184,695	...	...	615,907
S. Carolina	36	...	319	...	...	...	...	...	...
Tennessee	137	5,346	58	...	...	...	...	...	...
Texas	6,680	1,347	54,036	...	890	11,701	...	...	2,302,269
Total	21,317	79,323	286,268	209	970	197,085	15	...	4,426,783

Table 20.--Pink Bollworm Program, Regulatory Activities, Fiscal Year 1962

State	Inspection for certification						Commodity treatment		
	Number properties	Number acres	Processing plant visits	Shipping point visits	Industry site visits	Other	Lots serviced		
							Fumigated	Heated	Other
Arkansas	177	...	4,073	...	93	3	887	2	3,385
Georgia	...	...	...	...	...	...	729	...	...
Louisiana	3,980	188	2,548	36	...	1,995	241	5,931	51,855
Mississippi	8	...	...	...	...	8	...	...	...
Oklahoma	225	...	1,743	...	1	...	10	...	...
S. Carolina	1	...	...	...	1	...	...	...	...
Tennessee	81	...	67	6	...	10	28	2	...
Texas	6,132	...	20,948	29	24	302	4,761	18	217
Total	10,604	188	29,379	71	119	2,318	6,656	5,953	55,457

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

PINK BOLLWORM



SWEETPOTATO WEEVIL



Early in fiscal year 1962 a study was made by the Division Office to determine the exact status of the sweetpotato weevil work in the various states. It was found that, because of several factors, including mild winters, more general planting of sweetpotatoes, etc., sweetpotato weevils were more prevalent in the affected states than they had been for a number of years. A program was launched immediately to bring this insect under control.

In February of 1962 a severe freeze occurred over most of the South. Studies immediately following this freeze indicated that in many of the infested states it had wiped out field remnants of sweetpotatoes, vines, draws, etc., and completely eliminated the population of weevils that normally overwinter in the field. In order to take full advantage of this situation, additional funds were secured and the personnel staff augmented to permit the inspection of all sweetpotatoes and storage houses in the affected area.

This work was begun in mid-March in cooperation with the states concerned. Potato houses, banks, sheds, and all storage areas were carefully inspected and potatoes that remained in storage were treated with DDT dust to eliminate or reduce populations of weevils that might be carried over under these protected conditions. This inspection was followed by a carefully

planned program to supervise and treat all seedbeds in the affected area, and to follow through with a program of field treatments of 2-percent dieldrin dust wherever the necessity for such additional safeguards was indicated. It is too early as yet to accurately evaluate the degree to which this extended program has succeeded in accomplishing the objective desired. Early indications, however, are that it has been most effective; and it is expected that this fall the South will go into the storage season with the lowest sweetpotato weevil population it has had in many years.





Table 21.--Sweetpotato Weevil Program, Survey and Control Activities, Fiscal Year 1962

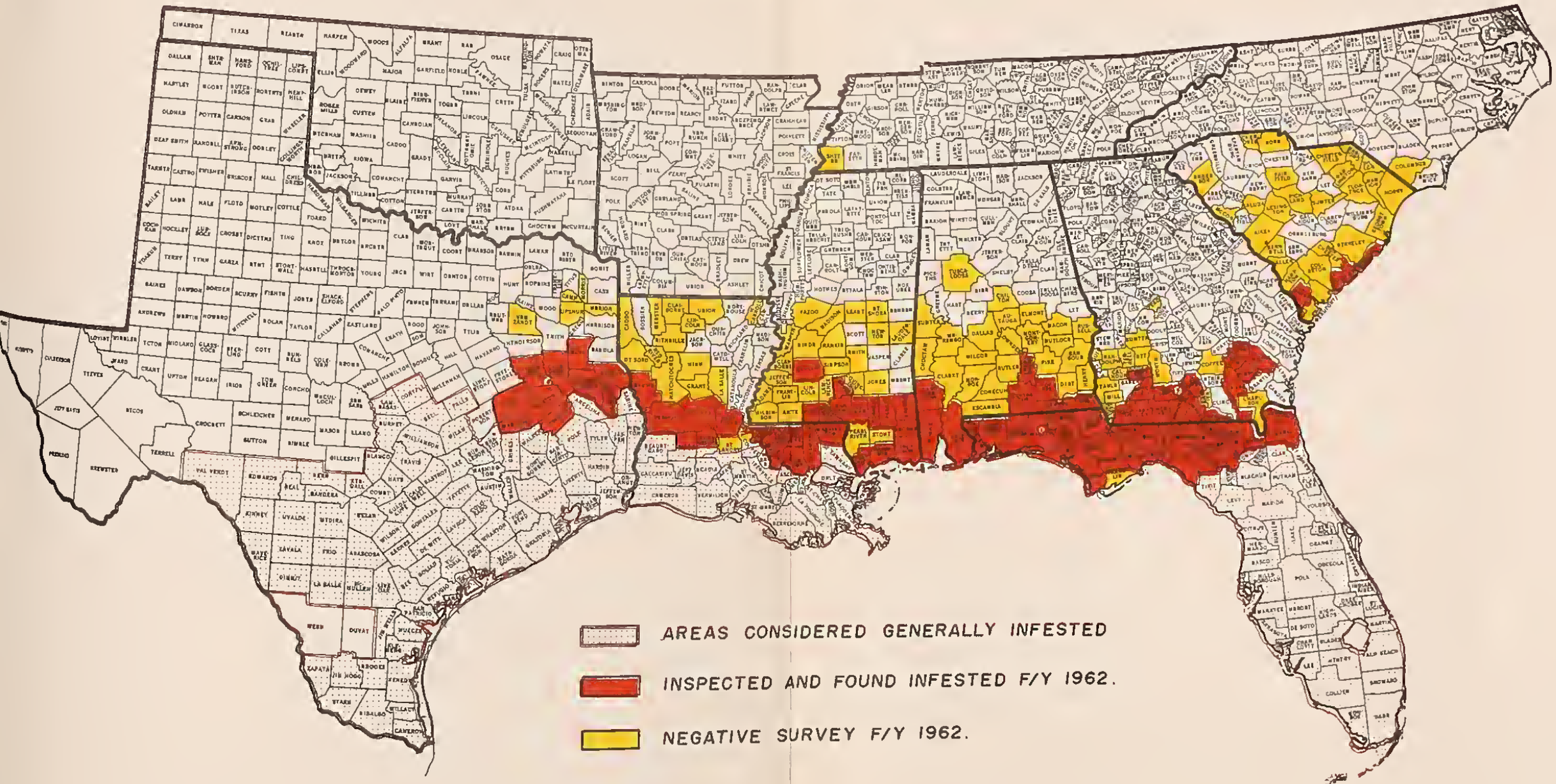
State	Survey and detection					Control			
	Surveyed		Infested			Insecticide treatment		Acres treated	
	Number props.	Bushels potatoes	Number props. found	Number props. released	Active infestations 6-30-62	Acres	Bushels potatoes	Herbicide	Mechanical
Alabama	9,190	22,718	52	70	88	4,790	52,331	...	...
Florida	16,358	17,178	862	0	862	152	13,336	32	...
Georgia	5,822	115,879	456	74	596	4,042	15,000	234	28
Louisiana	16,492	295,226	102	154	170	4,923	1,039,846	...	35,568
Mississippi	26,797	55,165	372	156	395	6	23	...	4
N. Carolina	186	10,000	...	...	...	...	...	...	...
S. Carolina	2,268	14,916	3	1	11	320	...	451	...
Tennessee	6	460	...	...	...	...	...	...	...
Texas	...	...	...	...	...	234	...	...	...
Total	77,119	531,542	1,847	455	2,122	14,467	1,120,536	717	35,600

Table 22.--Sweetpotato Weevil Program, Regulatory Activities, Fiscal Year 1962

State	Inspection for certification					Acres treated for certification purposes		Commodity treatment			
								Lots serviced			
									Other		
	Number props.	Acres		Processing plant visits	Other			Fumigated	Fruits and vegetables	Transplants	Other
		Nursery	Other			Soil	Foliage				
Alabama	6,149	36	1,917	40	22,616	17	629	...	184	24	5,029
Florida	2	...	1	...	...	...	...	...	...	4,594	2,611
Georgia	3	...	25	...	...	...	...	...	...	2,024	1,342
Louisiana	10,229	531	42,670	11,133	59,614	6	...	12	1	1,796	6,243
Mississippi	135	12	231	...	2,737	...	...	...	...	2,076	469
Texas	166	...	...	166	...	...	...	...	...	1,014	677
Total	16,684	579	44,844	11,339	84,967	23	629	12	185	11,528	16,371

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

SWEETPOTATO WEEVIL



WHITE-FRINGED BEETLE





At the close of the 1962 fiscal year, white-fringed beetles had been found on 1,302,003 acres in the nine southeastern states. This figure includes 155,679 acres found during 1962. The greatest amount of infested land was found in Mississippi, where 58,531 acres were reported for the first time, followed by Georgia with an increase of 37,692 acres. The most disturbing increase was found in Tennessee, where 25,942 acres not previously known to be infested were found to be supporting beetle populations. The finding of an additional 3,000 infested acres in Arkansas was viewed with concern, also; fortunately, however, this acreage represented, principally, extensions to previously located infestations.

In all states, specimens were found for the first time in 17 counties, as follows: Bibb, Chambers, St. Clair, Sumter, and Walker in Alabama; Columbia, McDuffie, Seminole, and Walton in Georgia; Amite, Choctaw, Lee, and Winston in Mississippi; Sumter and Lee in South Carolina; and Bradley and Franklin in Tennessee. Hancock County, Georgia, Adams County, Mississippi, and Hamilton County, Tennessee, were found to be reinfested after several years.

The limitation of available funds of the cooperators and the Division has made it impossible to keep acres treated abreast of those being found infested. It is obvious that this is an undesirable position and certainly the figures as shown on the status of population table cannot remain favorable. There will be a shift of acres from the "no specimens found" and "light population" columns to the "moderate" and "heavy population" columns. This will be conducive to crop damage and hazard to spread.

Although it has not been possible to keep pace in our treatment program with new finds in areas of more general infestation, a continuing effort is being made to treat infestations in east Tennessee, all of Arkansas and South Carolina, and outlying infestations in North Carolina, as well as the most western infestations in Louisiana. These represent the outer fringes of infestation. It has been possible to continue with an aggressive treatment program in Arkansas and Tennessee only because of the financial assistance provided by the two states and the cities and

counties involved. Although far from the desired amount of treatment has been done in the state of Alabama as a whole, the largest treatment program in the Region was completed in that state. This was made possible through the efforts of the Division and the Alabama Department of Agriculture personnel in obtaining local assistance. Here, again, first attention was given to newly found and outlying infestations.

Control treatments for regulatory purposes were not lessened. In fact, this phase of the work received more attention in 1962 than in any other year during the last ten.

The economic damage potential of the white-fringed beetle is displayed by the following pictures, which were made earlier in the history of this program. Through educational programs to teach the farmers methods of appraising populations and the judicious use of insecticides, losses of this kind have been reduced to a minimum. Instances of the kind illustrated here are seldom seen in the white-fringed beetle infested area today, although the destructiveness of the insect remains unchanged.



White-fringed beetle larvae feeding in onion plant.



Larval damage to tuber of Irish potato.



Cotton field showing white-fringed beetle damage.



Same field following control with insecticides.

Table 23.--White-Fringed Beetle Program, Survey and Control Activities, Fiscal Year 1962

State	Survey and detection				Control		
	Surveyed		Infested		Insecticide treatment (acres)		
	Number properties	Number acres	Number properties	Number acres	Ground	Air	Total
Alabama	7,688	...	413	18,601	5,228	11,598	16,826
Arkansas	1,537	...	28	3,235	971	5,499	6,470
Florida	213	...	...	...	372	...	372
Georgia	9,189	...	1,025	37,692	7,621	1,838	9,459
Louisiana	4,678	45,589	413	5,419	5,546	...	5,546
Mississippi	6,285	...	459	58,531	2,415	...	2,415
N. Carolina	13,341	...	430	5,568	3,258	...	3,258
Oklahoma	47	...	...	...	...	...	...
S. Carolina	5,092	...	87	691	721	...	721
Tennessee	12,902	...	796	25,942	5,688	3,857	9,545
Texas	12	...	...	...	...	...	...
Total	60,984	45,589	3,651	155,679	31,820	22,792	54,612

Table 24.--White-Fringed Beetle Program, Regulatory Activities--Inspection for Certification
Fiscal Year 1962

State	Inspection for certification						
	Number properties	Acres		Processing plant visits	Shipping point visits	Industry site visits	Other inspections
		Nursery	Other				
Alabama	1,242	5,576	6,698	27	388	48	4,910
Florida	1,323	577	1,000	...	1,056	703	120
Georgia	274	1,380	2,496	2	25	29	3
Louisiana	95	450	163	...	...	1	...
Mississippi	796	1,961	1,941	...	64	229	65
N. Carolina	64	148	599	...	16	23	...
S. Carolina	26	126	5	...	...	2	...
Tennessee	234	2,090	527	...	127	133	19
Total	4,054	12,308	13,429	29	1,676	1,168	5,117

Table 25.--White-Fringed Beetle Program, Regulatory Activities--Certification and Commodity Treatment
Fiscal Year 1962

State	Acres treated for certification		Commodity treatment				
			Lots serviced				
	Soil	Foliage	Fumigated	Dipped	Soaked	Heated	Other
Alabama	13,501	242	220	30	...	19,484	785
Arkansas	38	...	...	...	...	...	...
Florida	498	...	1	...	...	...	151
Georgia	1,641	5	2,000	1,041	...	548	3,779
Louisiana	193	...	6	21	...	...	1
Mississippi	1,223	185	106	87	...	...	9,177
N. Carolina	321	...	...	78	33	...	53
S. Carolina	13	...	4	...	1	...	...
Tennessee	1,632	158	66	...	...	...	94
Total	19,060	590	2,403	1,257	34	20,032	14,040

Table 26.--Status of White-Fringed Beetle Program, June 30, 1962

State	Estimated acres found infested from beginning of program	Estimated infested acres treated, treatment still effective*	Estimated infested acres remaining to be treated	Infestation eradicated**	
				Number counties	Number acres
Alabama	324,079	98,643	225,436	...	...
Arkansas	5,812	5,812	...	...	...
Florida	140,788	50,715	90,073	...	...
Georgia	409,024	110,531	298,493	6	612
Louisiana	36,964	23,743	13,221	2	275
Mississippi	244,000	22,442	221,558	1	4
N. Carolina	50,904	33,139	17,765	1	15
S. Carolina	6,682	6,682	...	1	51
Tennessee	83,750	27,780	55,970	...	...
Total	1,302,003	379,487	922,516	11	957

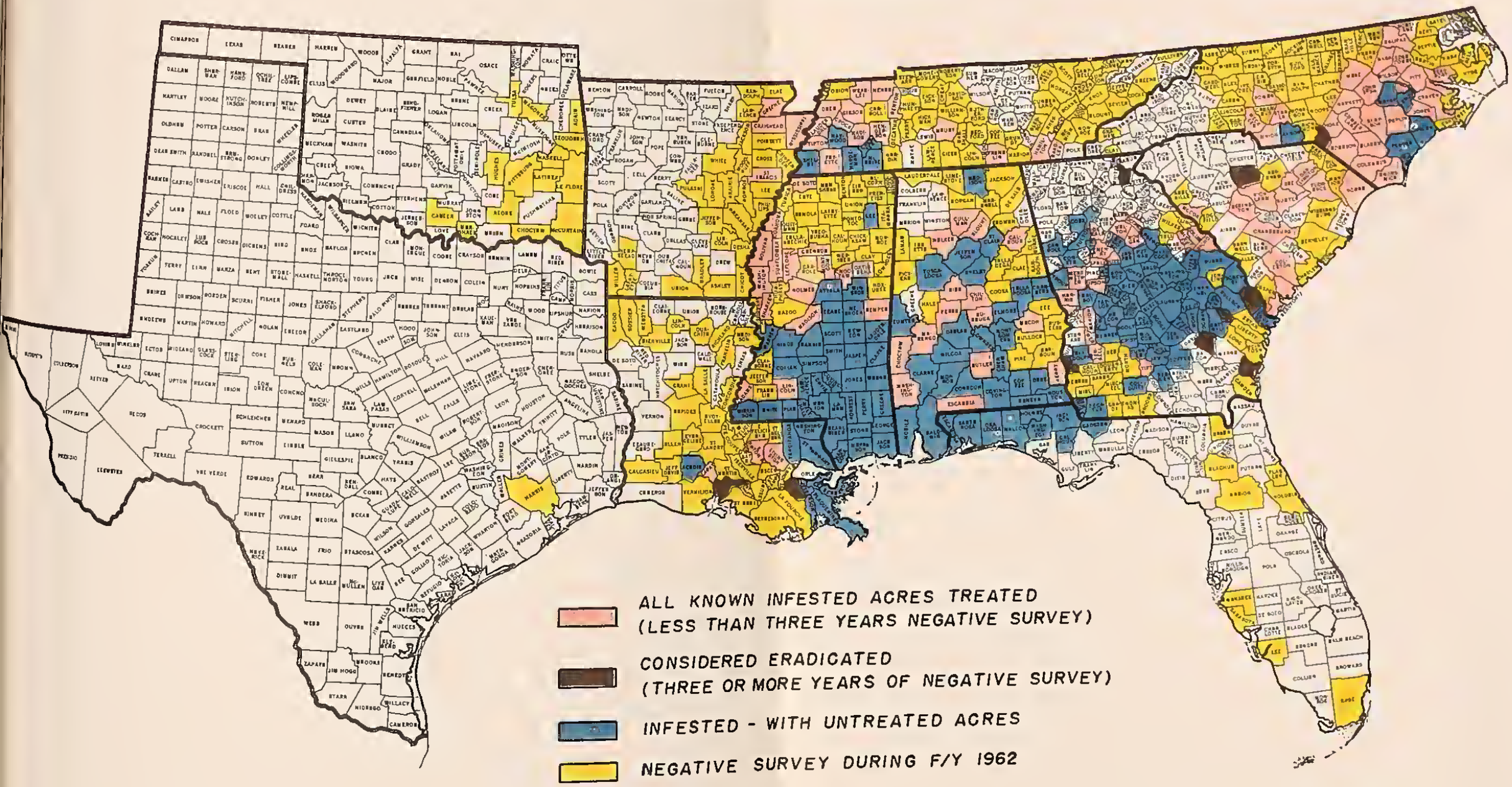
* Does not include periphery treatment or "buffer" zone.
**Based on negative survey for 3 or more consecutive years.

Table 27.--White-Fringed Beetle Program, Status of Populations, June 30, 1962

State	No specimens found		Light populations		Moderate populations		Heavy populations		Total	
	Acres	Per-cent	Acres	Per-cent	Acres	Per-cent	Acres	Per-cent	Acres	Per-cent
Alabama	75,284	23	178,553	55	63,134	20	7,108	2	324,079	100
Arkansas	5,732	99	80	1	...	...	...	...	5,812	100
Florida	74,823	53	28,321	20	25,425	18	12,219	9	140,788	100
Georgia	129,053	32	187,328	46	82,898	20	9,745	2	409,024	100
Louisiana	31,545	85	5,419	15	...	...	...	...	36,964	100
Mississippi	70,129	29	127,731	52	38,577	16	7,563	3	244,000	100
N. Carolina	27,115	53	15,436	30	7,687	15	666	2	50,904	100
S. Carolina	6,018	90	664	10	...	...	...	...	6,682	100
Tennessee	26,095	31	40,716	49	16,150	19	789	1	83,750	100
Total	445,794	34	584,248	45	233,871	18	38,090	3	1,302,003	100

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

WHITE-FRINGED BEETLE



WITCHWEED

Since the discovery in 1956 in North Carolina and South Carolina of this parasitic plant, which attacks corn, sorghums, sugarcane, crabgrass, and many other plants of the grass family, 30 contiguous counties in the eastern portion of the Carolinas have been found infested. Of these infested counties, 20 are located in North Carolina, involving 166,889 acres, and 10 are in South Carolina, involving 43,782 acres. The areas of infestation in these counties range from mere spots to more than 100,000 acres (Robeson County, North Carolina). The pattern of infestation has not changed since the 1959 survey established Robeson County, with approximately 50 percent of the infested farms and almost 70 percent of the infested acres for North Carolina, as the geographical center of the witchweed area.

During the fiscal year, all counties in North and South Carolina were surveyed. For the first time, witchweed was found in Wake County, North Carolina, involving one farm; while in South Carolina, one farm was found infested in each of the counties of Clarendon and Lee.

During the past year, more emphasis was placed on survey in the non-infested states of the Southern Region. A special survey was conducted in Florida, with particular attention to likely introduction points in an area bounded on the west by Tallahassee and on the south by Lake Okeechobee. Major attention was given to the sugarcane production area. Sugarcane is becoming more and more significant with the restrictions on importation of sugar from Cuba. The accompanying tables and map reflect the amount of inspection done in each state of the Region.

The principal method of control continues to be spraying with 2,4-D after the plant appears above ground. This takes place from mid-June to the first killing frost. It is necessary to repeat the application at 1 pound per acre three or more times. One of the encouraging results in the progressive use of 2,4-D has been the reduction in the number of repeat applications needed to bring witchweed under control. In 1959 many fields required six and seven repeat applications, and last year the average repeat was 3.9. Also of interest has been the transition from control applied by the Division to control applied under contract. In 1959, all treatment was by Division equipment and personnel. This season, all control was applied by contractors. Control by contractors is the cheaper method. In 1959, the cost per acre was as high as $2.50. During this season, spraying was done at a cost as low as $1.50 per acre. Another encouragement is that many fields which have been under control for three or more years appear, on inspection, to be free of witchweed.

State and federal quarantines impose restrictions on the movement of crops or commodities that might harbor the witchweed plant or seed. Approved procedures, involving fumigation schedules, processing, washing, recleaning (seeds), and heating, plus reduction of the pest on farms by persistent control, have done much to prevent witchweed spread.



During Operation Swift Strike this summer in North and South Carolina, it was necessary to free from witchweed seeds hundreds of Army vehicles and the clothing of many troops before they moved from the infested area.





This was accomplished by washing vehicles and shoes of the men with water under high pressure and by laundering the uniforms of many of the men before they left the area.

Table 28.--Witchweed Program, Survey and Control Activities, Fiscal Year 1962

State	Survey and detection				Control		
	Surveyed		Infested		Number properties	Acres treated	
	Number properties	Number acres	Number properties	Number acres		Herbicide	Mechanical
Alabama	1,373	45,176	...	...	...	...	...
Arkansas	54	958	...	...	...	...	...
Florida	1,303	85,383	...	...	...	...	...
Georgia	1,511	22,798	...	...	...	...	...
Louisiana	1,469	22,917	...	...	...	...	...
Mississippi	1,635	29,899	1,296	41,688	10,636	326,535	886 N.C
N. Carolina	54,052	752,625	...	...	...	...	...
Oklahoma	298	5,374	...	...	...	...	...
S. Carolina	23,902	430,849	312	2,153	1,751	101,270	...
Tennessee	396	9,015	...	...	...	...	...
Texas	1,369	25,983	...	...	...	...	...
Total	87,362	1,430,977	1,608	43,841	12,387	427,805	886

Table 29.--Witchweed Program, Regulatory Activities, Fiscal Year 1962

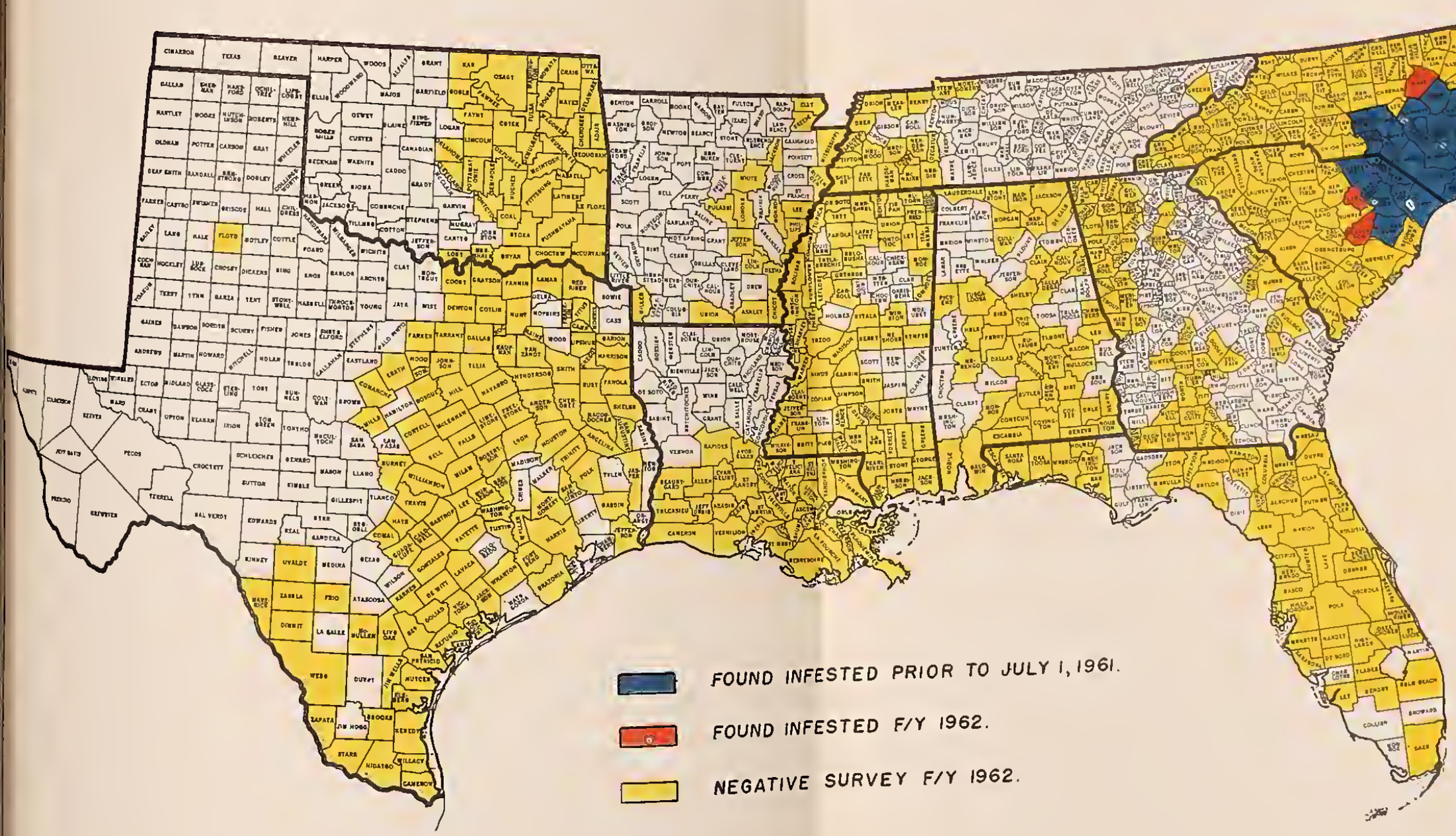
State	Inspection for certification							Commodity treatment	
	Number properties	Acres		Processing plant visits	Shipping point visits	Industry site visits	Other	Lots serviced	
		Nursery	Other					Fumigated	Other
N. Carolina	4,819	247	4,182	1,225	60	55	64	60,409	20,696
S. Carolina	175	...	10,211	18	16	19	21	1,409	544
Total	4,994	247	14,393	1,243	76	74	85	61,818	21,240

Table 30.--Witchweed Program, Status of Infestation, June 30, 1962

State and county	Number farms infested	Number acres infested
North Carolina:		
Bladen	1,353	16,342
Brunswick	4	39
Columbus	546	9,001
Cumberland	612	11,164
Duplin	96	2,671
Harnett	54	449
Hoke	310	5,466
Johnston	7	74
Jones	6	52
Lenoir	20	408
Montgomery	3	10
Moore	15	143
Pender	42	462
Pitt	3	47
Richmond	3	79
Robeson	3,776	110,423
Sampson	552	7,475
Scotland	97	1,583
Wake	1	3
Wayne	58	998
Total	7,558	166,889
South Carolina:		
Chesterfield	2	15
Clarendon	1	21
Darlington	12	199
Dillon	808	23,026
Florence	57	638
Horry	447	6,922
Lee	1	19
Marion	407	6,089
Marlboro	272	6,793
Williamsburg	1	60
Total	2,008	43,782
Grand total	9,566	210,671

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
SOUTHERN REGION

WITCHWEED




GRASSHOPPER
PEACH MOSA
PINK BOLLWORM
MEXICAN FRUIT FLY
CITRUS BLACKFLY

PLANT PEST CONTROL

COOPERATIVE PROGRAMS

WESTERN REGION

FISCAL YEAR

1962

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

PLANT PEST CONTROL

COOPERATIVE

PROGRAMS



FISCAL YEAR

1962

OAKLAND, CALIFORNIA JULY 1962

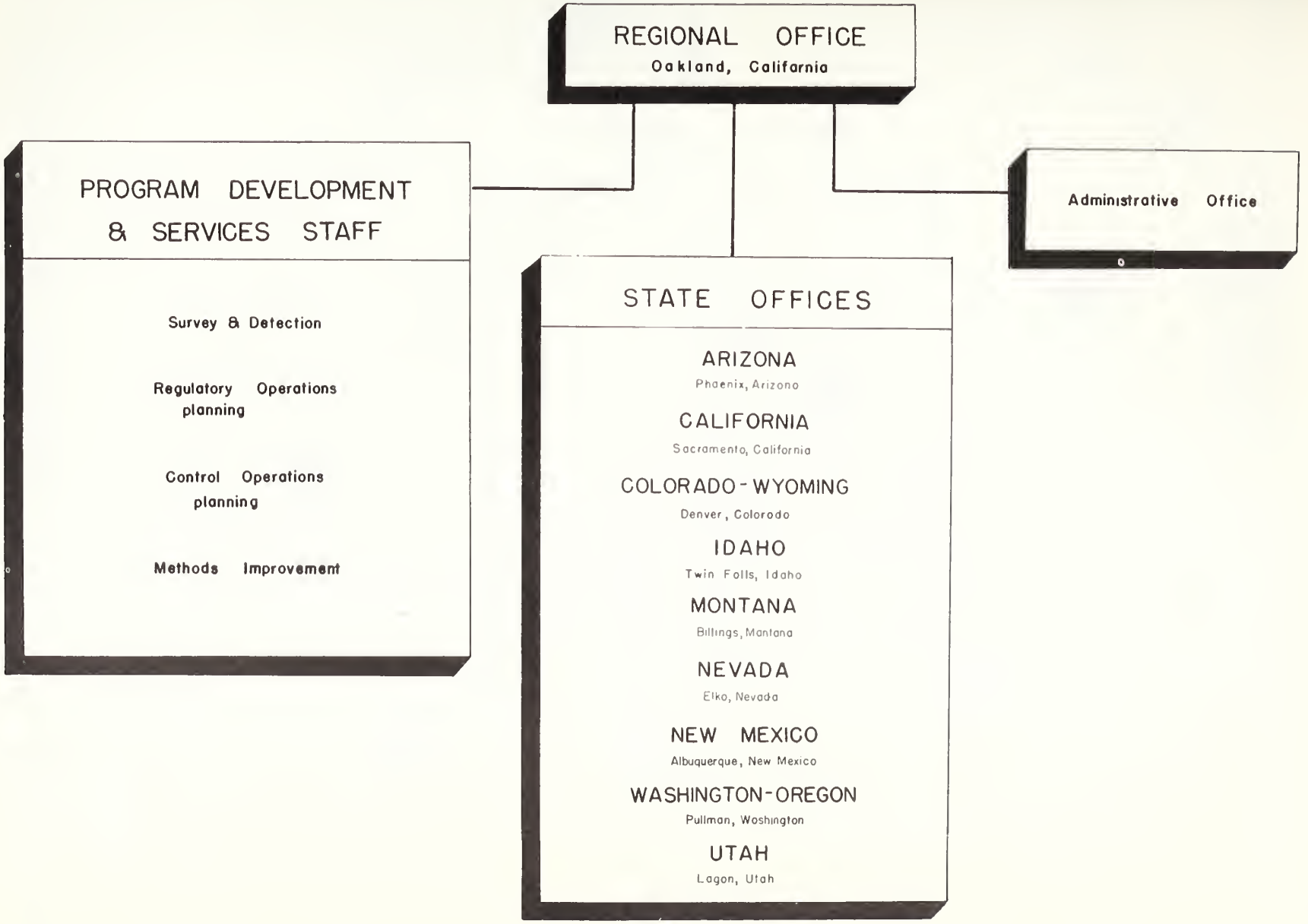
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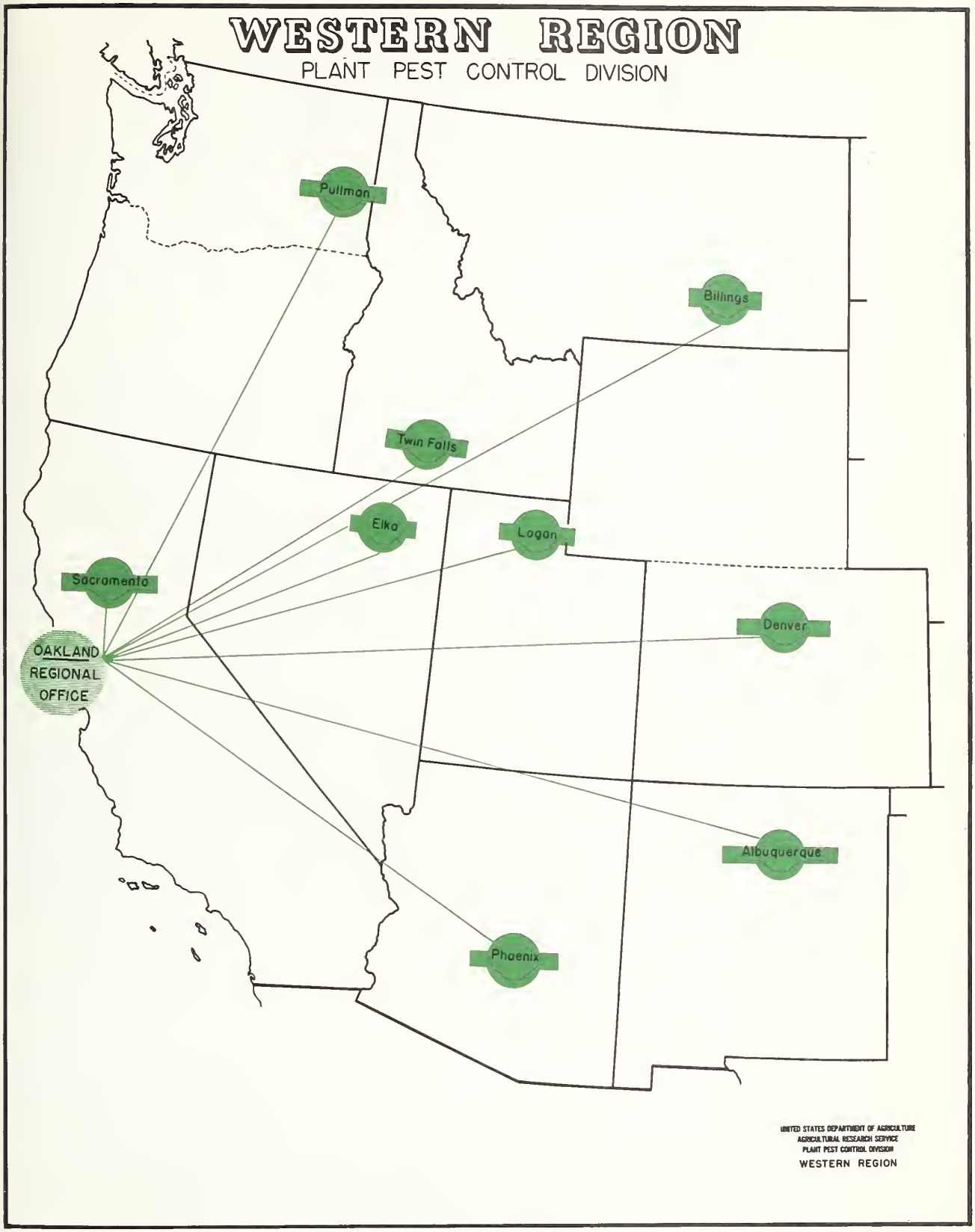
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WESTERN PLANT PEST CONTROL REGION




WESTERN REGION
PLANT PEST CONTROL DIVISION
Pullman
Billings
Twin Falls
Elko
Logan
Sacramento
OAKLAND
REGIONAL
OFFICE
Denver
Albuquerque
Phoenix
UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION
WESTERN REGION

GPO 983514

PLANT PEST CONTROL COOPERATIVE PROGRAMS

The ten cooperative action programs carried on in the eleven-state Western Region developed as indicated by their respective surveys, and as other factors permitted. Work done on each was commensurate with pre-season plans except for Grasshopper Control. Elsewhere in this report the causes for eliding biologically warranted effort on that program are elaborated. They were chiefly economic. The probable net result is a postponement for a season of the prudent control activity to suppress grasshoppers which our cooperators and we should have undertaken during FY 1962.

Brief, special mention of the status of our eradication progress by programs follows:

Pink Bollworm Eradication - Only two moths were trapped in Arizona, one being discovered in the eradication area. No larvae were found in the 300,000 acres of exposed cotton fields since our last annual report. Gin trash examination yielded four specimens during FY 1962 - 1160 acres required insecticide treatment.

Increasing farmer eagerness to grow cotton, unhampered by pink bollworm eradication restrictions, culminated in a test lawsuit. The petitioners, whose lands had been free of the pest for three years, as a result of eradication effort, sought to have their operations exempted. The courts held a series of special hearings and upheld the reasonableness of and necessity for the Arizona Commission's regulations which continue in effect.

Examination of gin trash later this field season will give us our best information on progress made toward eradication.

Khapra Beetle Eradication - Eradication gains against the khapra beetle encouraged our cooperators to acquiesce in the Division's recommendation that we taper the frequency of property inspections which have been variously scheduled for examination since the start of the Khapra Beetle Eradication Program. Except for affirmatively suspect premises, inspection work will be done on a detection basis. Supervisors, especially in infested states, will exercise their discretion in determining and justifying more frequent examination of suspect establishments.

The score during FY 1962 for the three states of the Western Region comprising our infested area is: Arizona - 9, California - 1, and New Mexico - 0.

Japanese Beetle Eradication - The forays of the Japanese beetle in other Regions of the Division conditioned our cooperators, and us, to expect stubborn resistance to eradication, from this pest. Amply provisioned with traps, fully supplied with insecticides and application facilities, and vigorously supported by pertinent quarantine regulations, the eradication of Japanese beetles from the infested Sacramento area has been vigilantly pushed. Predicted likely spread from the original "downtown"

Sacramento infested area, eventuated. The beetle was discovered in North Sacramento, west and north of the Sacramento River. That district was promptly added to the suppression area and infested and suspect environs are receiving the full insecticide treatment.

A noticeable decrease in the number of living Japanese beetles carried by aircraft into the Western Region is credited to the very fine preventive efforts of Division personnel and their cooperators in the eastern infested area.

Peach Mosaic Eradication - The year 1962 was the third successive year during which Peach Mosaic Disease incidence declined to an all-time low in California and Colorado. In 1961 and 1962 the mosaic recurred in Washington County, Utah.

A vector control experiment initiated in 1961 by Entomology Research at Lytle Creek, San Bernardino County, California, is in the second year of demonstration. Indicative results may be available in 1963.

Cooperative Survey and Detection was also of special interest. Cooperative Insect Survey contracts were in force with seven of the eleven Western States during FY 1962. The reports received from all states have been submitting interesting data, in a reasonably timely way. This circumstance seems to support our belief that the program 'per se' is recognized as worthwhile and that its intrinsic bilateral benefits are the prime compensation which cooperators derive from its operation.

BARBERRY ERADICATION

Survey and eradication activities during the fiscal year were conducted in 24 counties in Colorado, 1 county in Montana, and 10 counties in Washington. In Colorado 6 properties were inactivated in the Berberis fendleri work areas and 120 properties in the Berberis vulgaris work areas. Montana and Wyoming are on maintenance. One bush on one new property was found during 1962 in Carbon County, Montana.

In Okanogan County, Washington, a new escape area of common barberry (B. vulgaris) was found near the town of Tonasket. A rework survey was initiated in June in the 100-square mile, urban-suburban area centered on the city of Spokane, Spokane County, Washington. A TV presentation was filmed in the Spokane area at one of the work locations, showing the survey unit in operation, and included the procedures used in the actual eradication of barberry. Also, several newspaper stories and radio broadcasts were released on the Spokane rework.

In all of the counties worked in the eradication areas the principal survey was a reworking of old property sites and escape areas. Close cooperation was maintained with state and county officials in all areas worked.

Stem rust surveys were conducted weekly in 1961 during the growing season. Losses from stem rust were very light, except for a small area in Whitman County, Washington, where a moderate infection developed, principally on barley. In 1961 stripe rust severely reduced grain production in southeastern Washington. Losses ranged upwards to 30 percent. Some wheat varieties, though, show considerable resistance. Hot, dry weather of late summer stopped further spread of the fungus and the unfavorable fall and winter seems to have eliminated it as a threat to the 1962 crop.

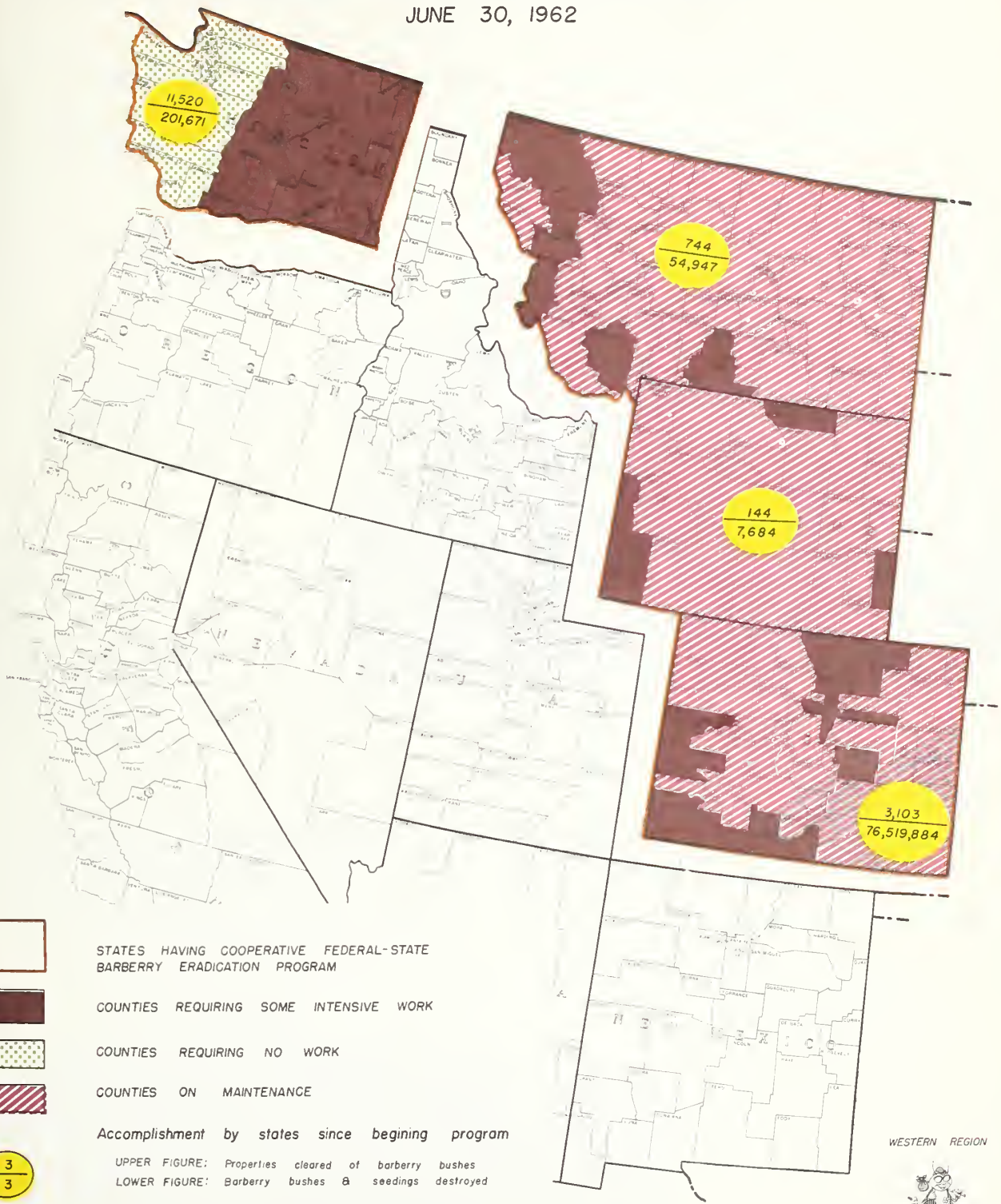
Nurseries making application for interstate shipment of Berberis in the States of California, Colorado, Montana, Oregon, Utah, and Washington were inspected and approved under the provisions of Federal Quarantine No. 38. Nursery dealers were also approved in the States of Oregon and Washington. Seed dealers were approved in the States of California, Montana, and Washington.

Mahonia japonica, M. piperiana, and M. pumila were tested for rust resistance by the Rust Laboratory. Each was found to be resistant and was approved for interstate shipment in accordance with the provisions of Quarantine No. 38.

Tests have been completed by the Rust Laboratory on a variety imported from Holland in 1960, Mahonia aquifolium atropurpurea. It was found to be rust resistant, therefore, eligible for release.

BARBERRY ERADICATION

JUNE 30, 1962



STATES HAVING COOPERATIVE FEDERAL-STATE BARBERRY ERADICATION PROGRAM

COUNTIES REQUIRING SOME INTENSIVE WORK

COUNTIES REQUIRING NO WORK

COUNTIES ON MAINTENANCE

Accomplishment by states since begining program

3/3

UPPER FIGURE: Properties cleared of barberry bushes
LOWER FIGURE: Barberry bushes & seedings destroyed

Summary of accomplishments all states Western Region

PROPERTIES CLEARED —— 15,511

BUSHES & SEEDLINGS DESTROYED —— 76,784,186

WESTERN REGION

PERCY PEST

PLANT PEST CONTROL DIVISION
ARS USDA
JUNE 30, 1962

GPO 965242

Barberry Eradication

Exceptionally good progress has been made toward eliminating this alternate host of stem rust.



Large barberry bush (B. Vulgaris) along fence row. Wild rose bush in center.



Grain rust survey is made annually by Division workers in principal States.

PRESENT STATUS, PROGRESS, AND FUTURE REQUIREMENTS, 1918 - 1962

Program Barberry Eradication

Fiscal Year 1962

State	SQUARE MILES										PROPERTIES			BARBERRY BUSHES DESTROYED		
	Total in State to be Worked	Number Covered				Number Requiring Work One or More Times				Number Requiring No Future Work	Total Found To Date	Number Needing One or More Reinspections	Number Completed	Common	Native	Total
		Initial Work		Rework		Farm-stead		Intensive								
		Farm-stead	Inten-sive	Farm-stead	Inten-sive	Initial	Rework	Initial	Rework							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Colo.	74,696	69,051	5,645	9,148	5,366	0	0	5	220	74,471	3,103	628	2,475	102,557	76,417,327	76,519,884
Mont.	146,316	146,316	426	6,044	756	0	0	0	31	146,285	744	52	692	54,947	0	54,947
Wash.	29,872	29,872	2,634	239	1,853	0	0	56	880	28,936	11,520	11,061	459	201,671	0	201,671
Wyo.	94,487	94,487	558	7,367	1,268	0	0	0	25	94,467	141	19	114	5,672	0	5,672
TOTALS	345,371	339,726	9,263	22,798	9,243	0	0	61	1,156	344,159	15,508	11,760	3,740	364,847	76,417,327	76,782,174

PROPERTIES CLEARED AND BARBERRY BUSHES DESTROYED

Program Barberry Eradication

Fiscal Year 1962

State	Square Miles Worked		Properties Found Infested		Old Properties Inspected	Properties Inactivated	Bushes Destroyed		Inspections	
	Initial	Rework	New	Old			Common	Native	Nursery	Dealer
Colorado	0	146	0	85	274	126	190	122,326	8	0
Montana	0	3	1	0	0	0	1	0	5	0
Washington	4	96	60	65	612	137	1,459	0	25	3
Totals	4	245	61	150	886	263	1,650	122,326	38	3

SUMMARY OF ASSOCIATED ACTIVITIES

Program Barberry Eradication

Fiscal Year 1962

State	Public Meetings Attended	Presentations					Feature & News Stories	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.	Infest.Maps & Posters	
Calif.		1	11					12	2,418	50	1	
Colorado										201	5	2
Montana									25			
Oregon				2					50			
Wash.	1	1			7	1	12		600			1
Total	1	2	11	2	7	1	12	12	3,093	251	6	3

GRASSHOPPERS

Of the several million acres of rangeland economically infested with grasshoppers in the Western Region, less than 150,000 were cooperatively treated for control. An abundance of grass, following adequate spring moisture conditions, in many plains areas masked the damage done by grasshoppers and gave ranchers the feeling that their grass would support both their livestock and the grasshoppers. In some areas the refusal of owners with land located in the center of a widespread infestation made it inadvisable to initiate cooperative control. In those states lacking appropriated funds for cooperative grasshopper control, there is usually reluctance on the part of ranchers to assume two-thirds of the cost of control (40¢ per acre or more) unless they are threatened with almost complete loss of grass. Cooperative control work was necessary and was done in Arizona, California, Colorado, Idaho, Nevada, Oregon, Utah, and Wyoming.

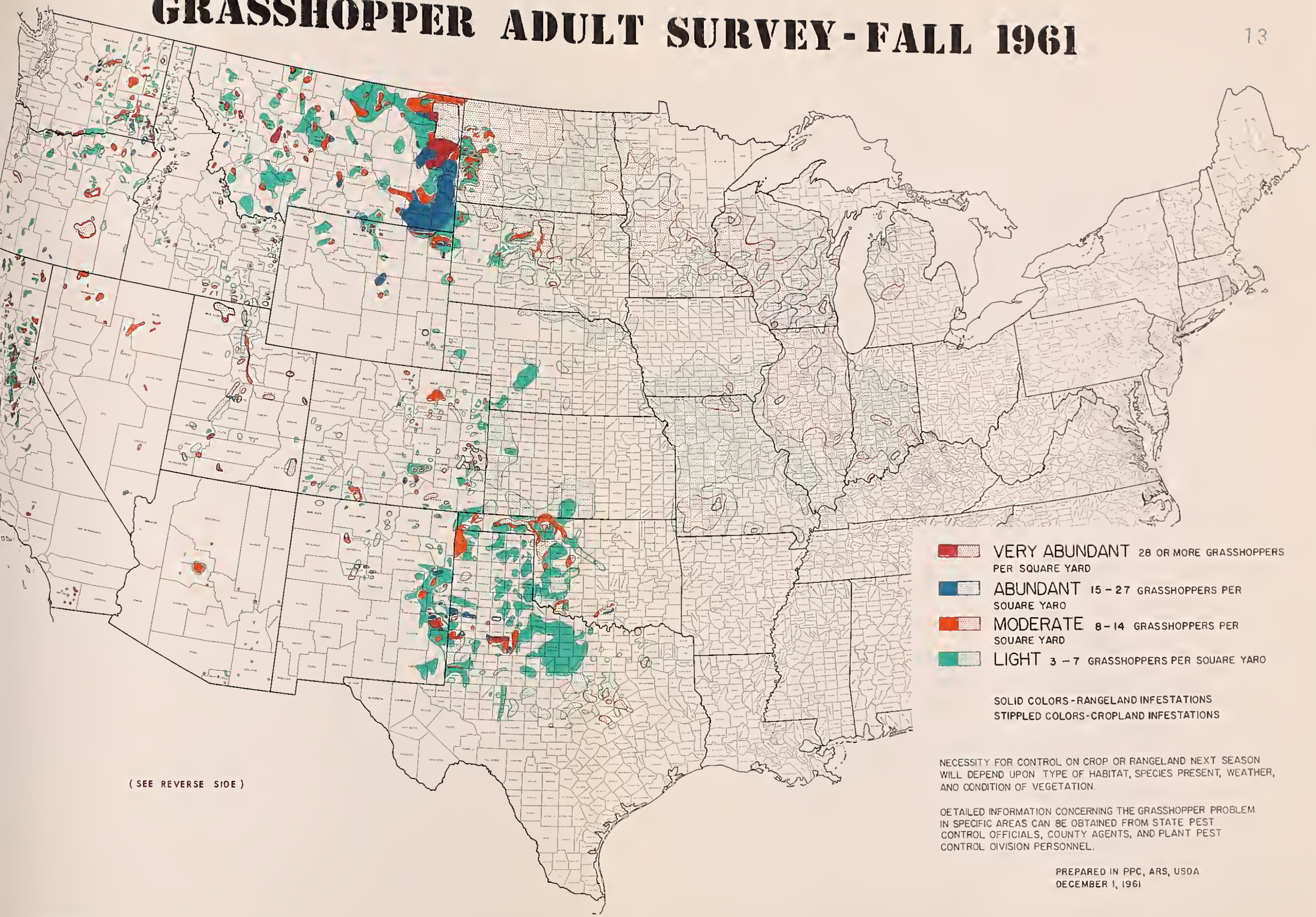
Developments relative to the use of chlorinated hydrocarbons in grasshopper control made it possible to use these very effective and inexpensive materials somewhat more widely than was the case during the previous control year.

Conservation Reserve lands continue to serve as reservoirs of infestations in several states. This is especially true in Colorado, Idaho, and Utah, where landowners this year took steps in some areas to control the heavy populations on these lands. The control areas, however, were not of sufficient size to have statewide influence on grasshopper infestations.

Limited use was again made of the insecticide Sevin on sensitive portions of bird refuges. The results obtained with this material continued to be good.

At this time, only limited areas of severe infestations are expected in the Region during the 1963 season. This picture may change when all data gathered during the adult survey have been processed.

GRASSHOPPER ADULT SURVEY - FALL 1961



VERY ABUNDANT 28 OR MORE GRASSHOPPERS PER SQUARE YARD

ABUNDANT 15 - 27 GRASSHOPPERS PER SOUARE YARO

MODERATE 8 - 14 GRASSHOPPERS PER SOUARE YARD

LIGHT 3 - 7 GRASSHOPPERS PER SOUARE YARO

SOLID COLORS - RANGELAND INFESTATIONS
STIPPLED COLORS - CROPLAND INFESTATIONS

(SEE REVERSE SIDE)

NECESSITY FOR CONTROL ON CROP OR RANGELAND NEXT SEASON WILL DEPEND UPON TYPE OF HABITAT, SPECIES PRESENT, WEATHER, ANO CONDITION OF VEGETATION.

OETAILED INFORMATION CONCERNING THE GRASSHOPPER PROBLEM IN SPECIFIC AREAS CAN 8E OBTAINED FROM STATE PEST CONTROL OFFICIALS, COUNTY AGENTS, AND PLANT PEST CONTROL OIVISION PERSONNEL.

PREPARED IN PPC, ARS, USOA
DECEMBER 1, 1961

GPO 983501

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PEST CONTROL DIVISION

TO COOPERATORS

This map is based upon the results of cooperative grasshopper adult surveys made during the late summer and fall of 1961. The survey reveals where and how many grasshoppers infest an area, and indicates the potential severity of infestations for 1962. Nymphal surveys, made in the spring, determine population densities, and indicate those areas where control may be necessary in 1962.

The infestations on croplands, shown on the map in stippling, in general are higher than that which was indicated in 1960. Control on those lands will be handled by the farmers with technical assistance from Division and State personnel. The infested range areas, shown on the map in solid colors (orange, blue and red only), total 13,351,790 acres in 15 Western and Midwestern States. Shaded areas on the map are diagrammatic. Within these areas, infestations may be solid or spotted.

RANGELAND GRASSHOPPER INFESTATIONS—ACREAGE BY REGIONS, FALL 1961

(Moderate Populations or Above – Orange, Blue and Red)

REGION AND STATE	LANDOWNERSHIP—ACRES		TOTAL ACRES
	PRIVATE AND STATE	PUBLIC DOMAIN	
CENTRAL			
No. Dakota	219, 160	236, 320	455, 480
So. Dakota	191, 260	103, 320	294, 580
WESTERN			
Arizona	35, 250	22, 750	58, 000
California	542, 890	36, 000	578, 890
Colorado	574, 100	37, 700	611, 800
Idaho	75, 250	215, 610	290, 860
Montana	6, 737, 000	1, 221, 000	7, 958, 000
Nevada	15, 830	52, 000	67, 830
New Mexico	776, 500	13, 500	790, 000
Oregon	100, 800	13, 500	114, 300
Utah	216, 800	100, 750	317, 550
Washington	637, 000	2, 000	639, 000
Wyoming	393, 500	19, 700	413, 200
SOUTHERN			
Oklahoma	185, 000	–	185, 000
Texas	577, 300	–	577, 300

The survey was planned and performed by the Plant Pest Control Division, Agricultural Research Service, in cooperation with various State agencies concerned.

GPO 983501

MENT OF AGRICULTURE
SEARCH SERVICE
TROL DIVISION

during the late summer and fall of 1961. The survey reveals where and how many grass-hal surveys, made in the spring, determine population densities, and indicate those areas

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INS—ACREAGE BY REGIONS, FALL 1961

ve – Orange, Blue and Red)

REGION AND STATE	LANDOWNERSHIP—ACRES		TOTAL ACRES
	PRIVATE AND STATE	PUBLIC DOMAIN	
Nevada	15,830	52,000	67,830
New Mexico	776,500	13,500	790,000
Oregon	100,800	13,500	114,300
Utah	216,800	100,750	317,550
Washington	637,000	2,000	639,000
Wyoming	393,500	19,700	413,200
SOUTHERN			
Oklahoma	185,000	–	185,000
Texas	577,300	–	577,300

Research Service, in cooperation with various State agencies concerned.

GPO 983501

Grasshoppers

Control on wildlife refuges is applied with ground equipment to assure highly accurate and complete coverage of important game food areas.

Applying insecticide-water sprays by turbine mounted on power wagon.





"Heavy" infestation of Camnula on Malheur Game Refuge, Oregon, 1962.

GRASSHOPPER CONTROL — RANGELAND

LOCATION OF AREAS COOPERATIVELY TREATED

1962 CONTROL SEASON



Treated areas are shown diagramatically and not to scale because of small number of acres involved in some counties. Actual treated acres are shown on legends

TOTAL ACRES TREATED — 134,946

WESTERN REGION

PERCY PEST

PLANT PEST CONTROL DIVISION
ARS USDA
AUGUST 1962

GPO 965211

SURVEY AND DETECTION REPORT

Program Grasshopper Control Fiscal Year 1962

STATE	NUMBER OF ACRES INFESTED	
	Adult Survey	Nymphal Survey
Arizona	57,500	4,800
California	578,890	407,660
Colorado	611,800	133,067
Idaho	290,860	342,150
Montana	7,958,000	280,000
Nevada	68,430	68,430
New Mexico	790,000	283,000
Oregon	114,300	12,100
Utah	317,550	115,900
Washington	639,000	-------
Wyoming	418,400	61,000
Total	11,844,730	1,708,107

WORK REPORT
1961 ADULT GRASSHOPPER SURVEY

Program Grasshopper Control

Fiscal Year 1962

State	No. of Counties Surveyed	Total No. of Stops	Miles Traveled on Survey	No. of Men		Man Days		Time Period		Cost	
				PPC	State & County	PPC	State & County	Start	Stop	PPC	State & County
Arizona	9	199	6,475	8	0	56	0	6/19/61	10/17/61	$ 540	$ 0
California	57	519	17,079	14	33	110	59	5/29/61	9/14/61	841	672
Colorado	50	446	21,325	6	2	70	22	7/17/61	8/18/61	602	461
Idaho	44	650	15,051	6	0	117	0	7/18/61	9/8/61	968	0
Montana	54	823	27,810	7	0	154	0	7/27/61	8/29/61	5,295	0
Nevada	17	-	12,475	3	1	62	30	7/5/61	8/31/61	1,733	760
New Mexico	11	112	14,251	5	1	46	28	6/20/61	8/18/61	385	225
Oregon	21	120	8,384	3	2	51	-	7/19/61	8/24/61	567	-
Utah	29	245	12,818	3	1	53	9	7/21/61	8/18/61	32	106
Washington	20	144	5,170	4	0	43	-	7/10/61	8/23/61	390	0
Wyoming	22	174	4,194	2	1	8¼	10	7/24/61	8/4/61	90	100
Total	334	3,432	145,032	61	41	770¼	158			$11,443	$2,324

SUMMARY OF ASSOCIATED ACTIVITIES

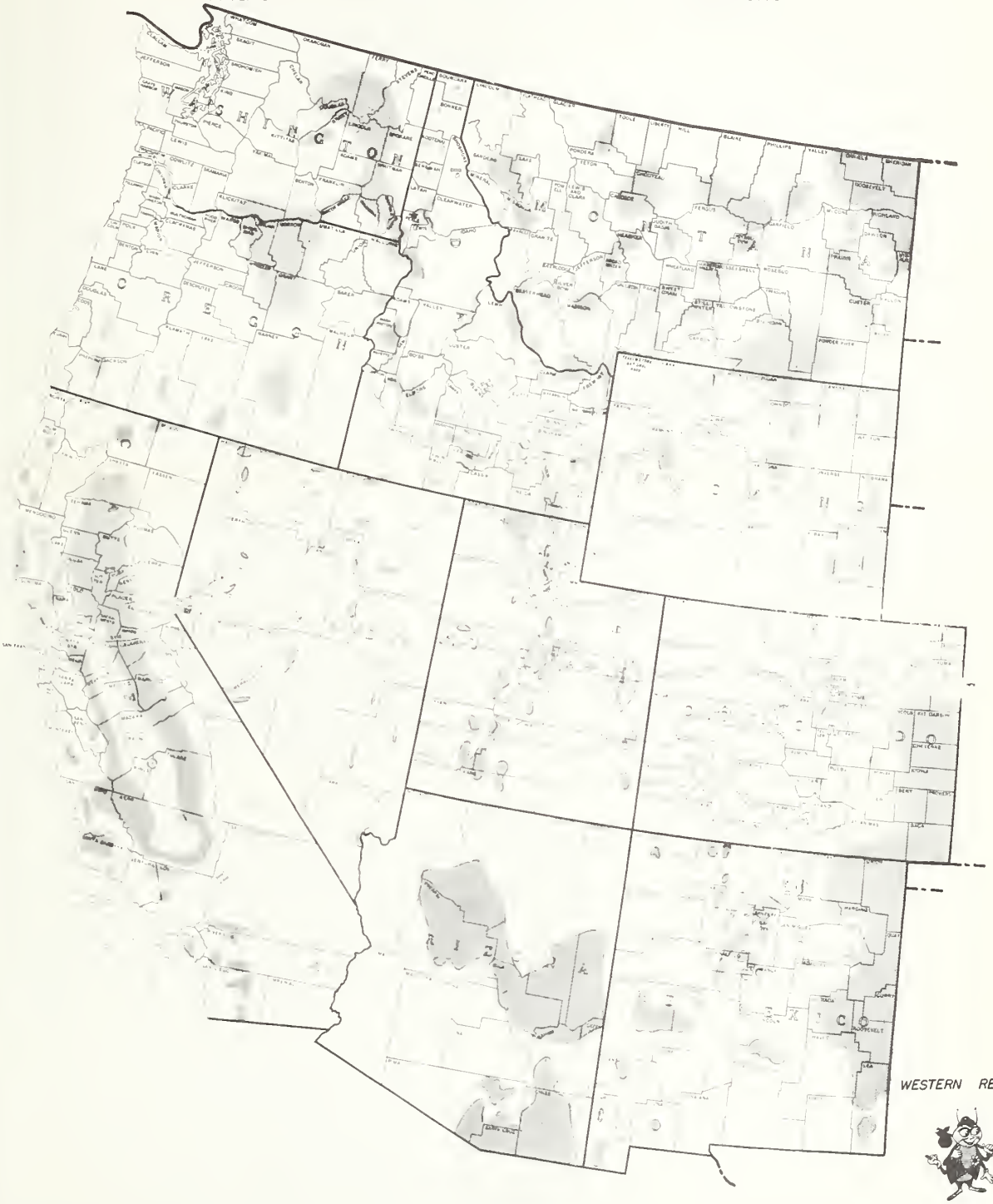
Program Grasshopper

Fiscal Year 1962

State	Public Meetings Attended	Presentations					Feature & News Stories	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.	Infest.Maps & Posters	
Arizona	2	2	1	1					200	75	12	
Calif.			11	39				11	487	1,150	10	
Colorado	6	5	2				4		31	650	52	52
Idaho	12	4	4	-	-		2			400	44	
Montana	14	14	2		4	1				1,420	65	
Nevada	4	3	1				5			350		1
Oregon	8	8					8		750		27	
Utah	12	10	22	2	2		15		15		510	6
Wash.	5	5					5	1	1,168		31	2
Wyoming	10	5							15	700	25	
Total	73	56	43	42	6	1	39	12	2,666	4,745	776	61

GRASSHOPPERS

AREAS WITH HISTORY OF GRASSHOPPER INFESTATIONS



WESTERN REGION

PERCY PEST

PLANT PEST CONTROL DIVISION
ARS USDA

GPO 965289

JAPANESE BEETLE

On June 7, 1961, a California State Department of Agriculture entomologist collected a live Japanese beetle in the Capitol Park grounds at Sacramento. Several more were found immediately thereafter, and the State and County Departments of Agriculture launched an extensive delimiting survey and a foliage spraying and dusting program. Plant Pest Control Division provided traps and lure and at the start of fiscal year 1962, joined the State and county on a 50-50 basis in an all-out eradication program.

Through trapping and extensive visual inspection the infestation was defined as the downtown area of Sacramento, principally around the Crocker Art Gallery, the Capitol grounds, and one isolated infestation about one mile to the northwest. One beetle was also collected by a householder in West Sacramento, Yolo County.

Foliage treatments with Sevin at approximately one pound actual per application were applied to an estimated 1350 acres. Ten percent Sevin dust was used on city-owned boulevard trees and a spray employing Sevin sprayable was used on the remainder. The bulk of the area received five applications and one late season discovery area received two. A fall soil treatment employing 10 percent granular chlordane, or in some situations, a chlordane water emulsion was applied to 1600 acres. Fifteen pounds actual chlordane per acre was used on all infested blocks while the remainder received 10 pounds.

A small number of live larvae and pupae were found in a few locations during the winter. Such spots, as well as previously infected blocks where soil analysis showed marginal residues of chlordane, were given an additional 5 pounds per acre during the spring of 1962 soil treatment. Foliar treatment was also started prior to the time when it was expected beetles might emerge.

The first beetle was trapped in the originally infested area on June 5, 1962. By the end of FY 1962 only five adult beetles had been recovered, the last catch being made on June 18. No beetles were found in the West Sacramento area treated in 1961, but on June 9 a beetle was found about one mile north of the previous infestation, and subsequent surveys revealed 27 others on nearby properties. This added 1500 acres to the treatment area and was promptly treated with foliage and soil insecticides.

The 1962 season foliar treatment area involved 2,850 acres. The original downtown infested area received 5 cover sprays, and city trees, 6 dustings. The original infested West Sacramento area had 2 sprayings, and the portion of West Sacramento found infested in 1962, 3 sprayings. The cumulative total of acres receiving foliage treatment in FY 1962 was 10,145, and 3100 mapped acres were soil treated. Visual inspection was done on 27,275 acres, and 6,395 traps were used. Infested acres totaled 160, calculated on the basis of three acres per city block.

An area in the City of Woodland in Yolo County, received some insecticidal treatment, in addition to some intensive trapping and visual inspections resulting from the discovery of a Japanese beetle in a high school student's insect collection. The student claimed to have collected the beetle from the area, although there was some question as to whether it was actually found in Woodland. Japanese beetles are a part of collections sold to students by certain eastern distributors, and it is now thought likely there was probably no discovery actually made in Woodland.

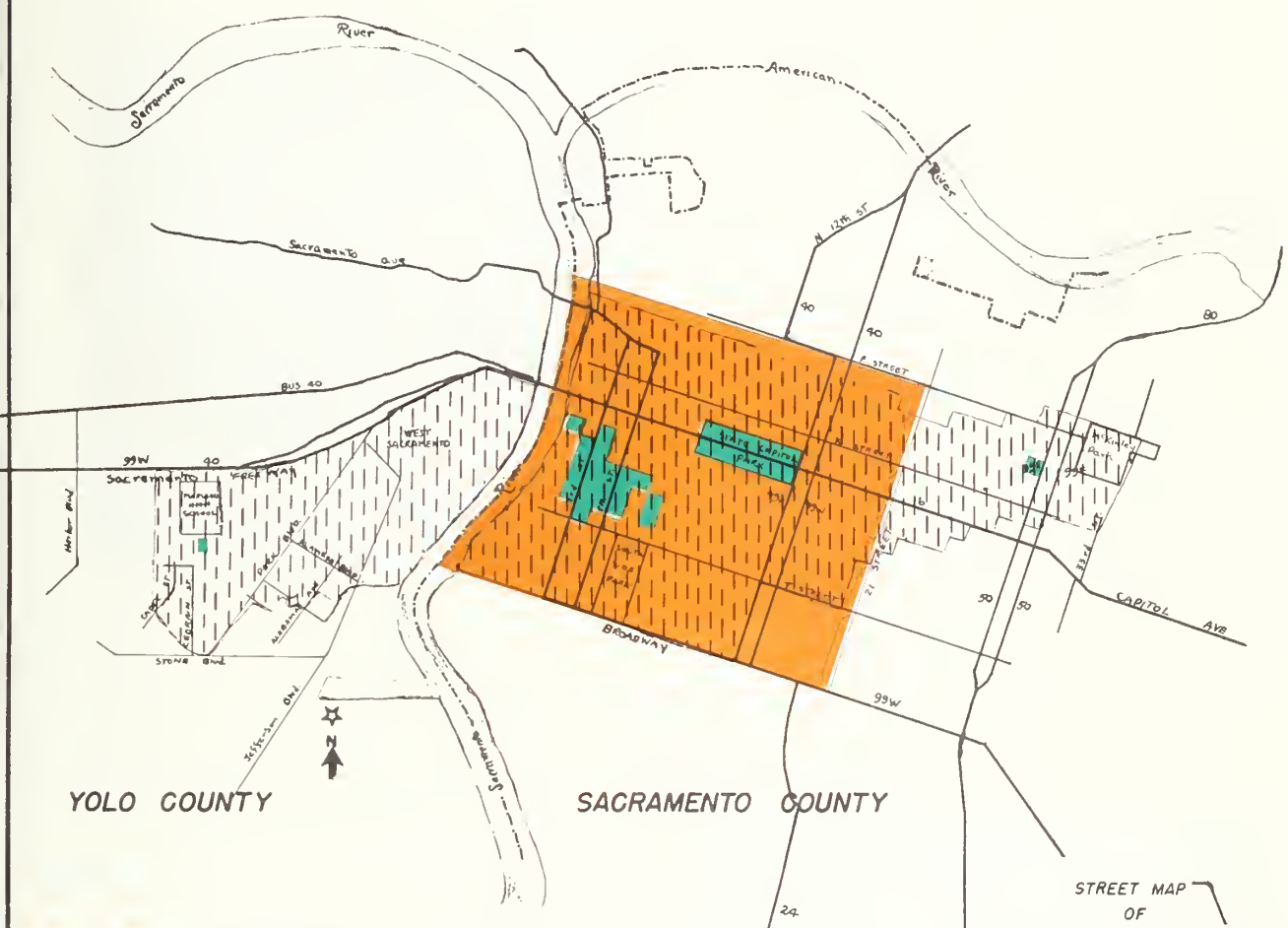
The usual householder complaints associated with the insecticidal treatment of metropolitan areas were prevalent, but state and county public relations workers did an exceptionally fine job of handling them.

Two eastern airports with flights serving the west coast were declared to be hazardous by the Division, on account of the Japanese beetle. Cleveland-Hopkins Airport was in this category for the period July 9 through August 20, and the Philadelphia International Airport for the period July 10 through August 14. Airplanes originating or stopping at the above airports were inspected at west coast destinations. Effective control measures were conducted at the Cleveland-Hopkins and Philadelphia airports, resulting in a very few live Japanese beetles being found. All inspection of airplanes was by State personnel except in Seattle, where the airlines personnel collected and reported on Japanese beetles found in servicing the airplanes. Cooperation on the part of the airlines was very good.

Japanese beetle traps were exposed from June 1 to September 1 at all major military and commercial airports in the Western Regional States. In some states a few cemeteries, golf courses, or other turfed areas at metropolitan centers were trapped.

JAPANESE BEETLE ERADICATION

CALIFORNIA



CALIFORNIA QUARANTINE AREA

INFESTED AREAS FOUND 1961 SEASON

AREA TREATED 1961 SEASON

SOIL TREATMENT	1600 acres
FOLIAGE TREATMENT	1117 acres

STREET MAP
OF
SACRAMENTO & WEST SACRAMENTO
(1 INCH EQUALS APPROX. 1/2 MILE)



PLANT PEST CONTROL DIVISION
ARS USDA
JUNE 30, 1962

GPO 984879

Japanese Beetle

Eradication is the objective



Rotomist, used in spraying foliage, Sacramento City area.

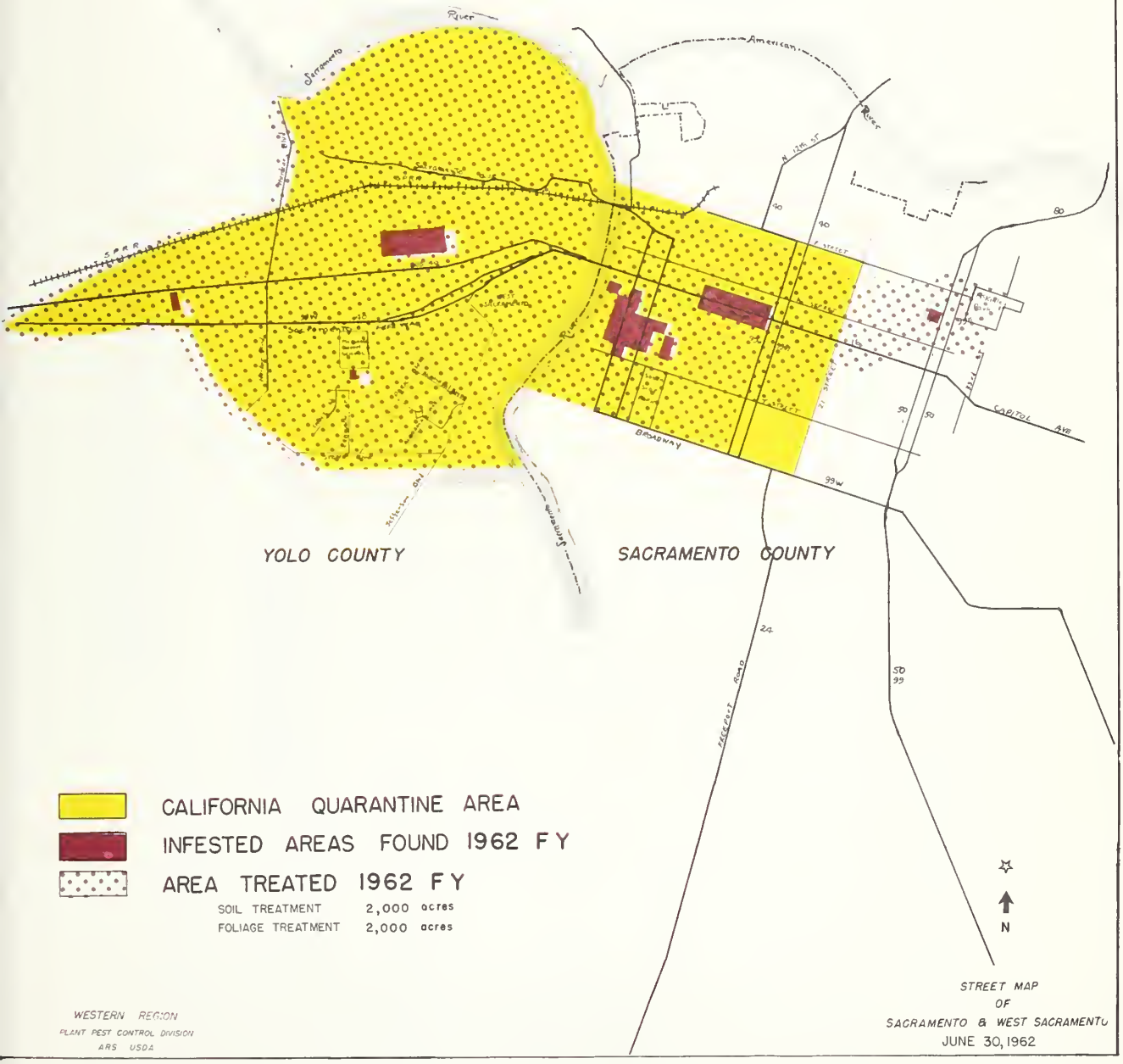


Soil application, Sacramento City area.

JAPANESE BEETLE ERADICATION

CALIFORNIA

FISCAL YEAR 1962



WESTERN REGION
PLANT PEST CONTROL DIVISION
ARS USDA

GPO 965060

CONTROL AND SURVEY ACCOMPLISHMENT REPORT

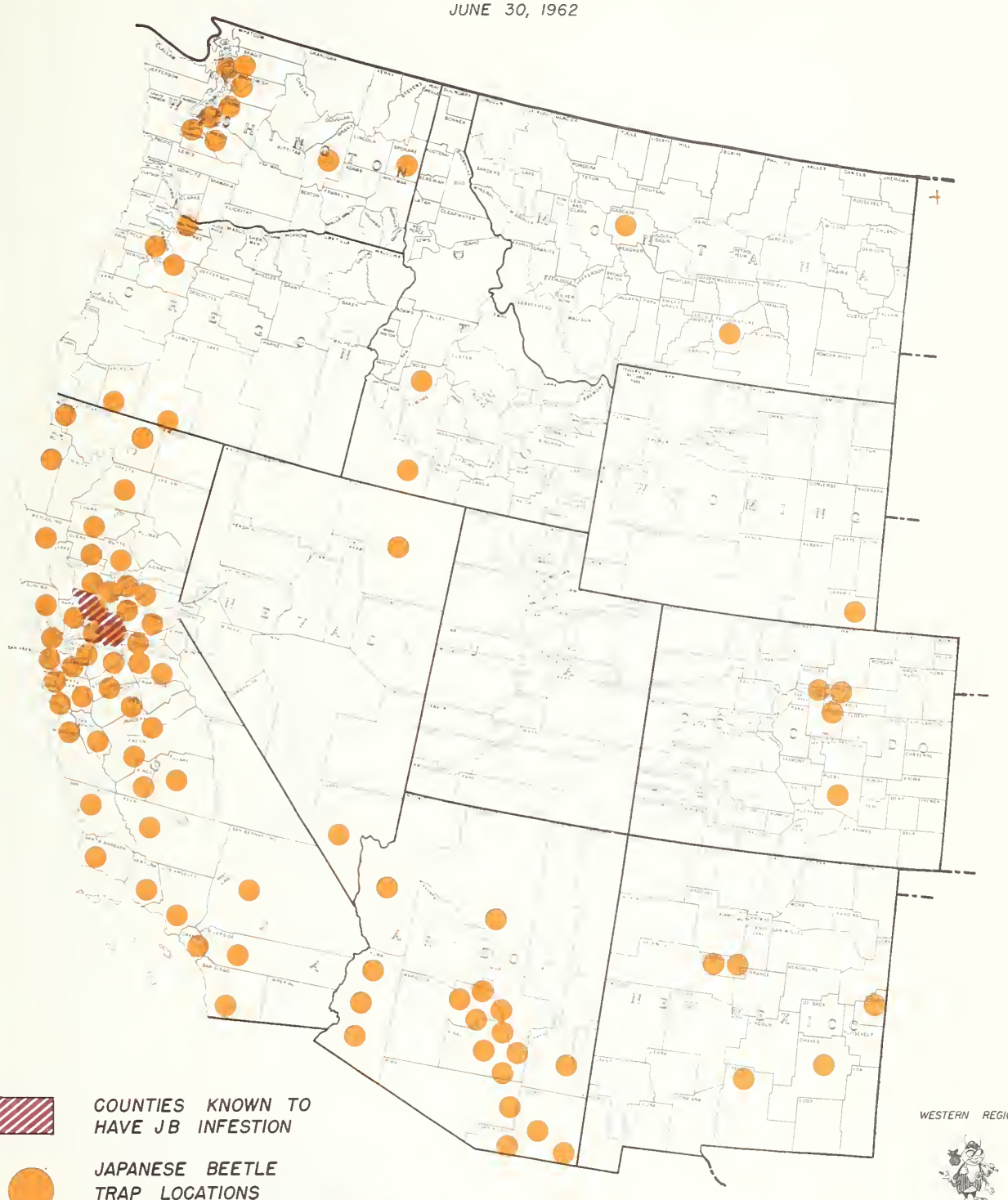
Program Japanese Beetle

Season 1962

State	Foliage Treatment		Soil Treatment	No. of Traps Placed
	Mapped Acres	Cumulative Acres	Mapped Acres	
Arizona				228
California	2,850	10,145	3,100	7,245
Colorado				48
Idaho				12
Montana				24
Nevada				31
New Mexico				50
Oregon				52
Washington				102
Wyoming				15
Total	2,850	10,145	3,100	7,807

JAPANESE BEETLE DETECTION PROGRAM

JUNE 30, 1962



COUNTIES KNOWN TO HAVE JB INFESTION

JAPANESE BEETLE TRAP LOCATIONS

TOTAL TRAPS EXPOSED — 7,807

WESTERN REGION

PLANT PEST CONTROL DIVISION
ARS USDA
JUNE 30, 1962

GPO 965211

SUMMARY OF ASSOCIATED ACTIVITIES

Program Japanese Beetle

Fiscal Year 1962

State	Public Meetings Attended	Presentations					Feature & News Stories	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.	Infest.Maps & Posters	
Calif.		1	12	64				11	7,772	15,000	1,045	
Nevada							1		10			
Oregon									5		12	
Wash.							2		9		21	1
Total		1	12	64			3	11	7,796	15,000	1,078	1

KHAPRA BEETLE

Conscientious inspection is the key to the cooperative khapra beetle eradication effort, and inspection of an intensive nature continued to receive priority during the fiscal year. This was demonstrated by the 42,842 property examinations which resulted in finding nine new infested properties in Arizona, one reinfested property in California, and none in New Mexico. No khapra beetles have been found in New Mexico since 1959.

The program has entered that monotonous phase where days, weeks, and months go by without finding the pest. This is best illustrated by the more than 2,000 property inspections made in Arizona before an infested property was located, and 20,685 property inspections made in California, with only one infestation found. Of the nine Arizona infestations, one was discovered on the initial inspection. It took multiple inspections of each of the other eight properties, some of them as often as ten times, to determine infestation. This tedious aspect of the program becomes more wearing as eradication, the ultimate goal, approaches reality. This is not an implication that our objective has been reached, but it emphasizes the importance of keeping up interest.

All things considered, it is felt that significant progress toward eradication has been made and that our cooperators at all levels share our sincere expectation of full accomplishment.

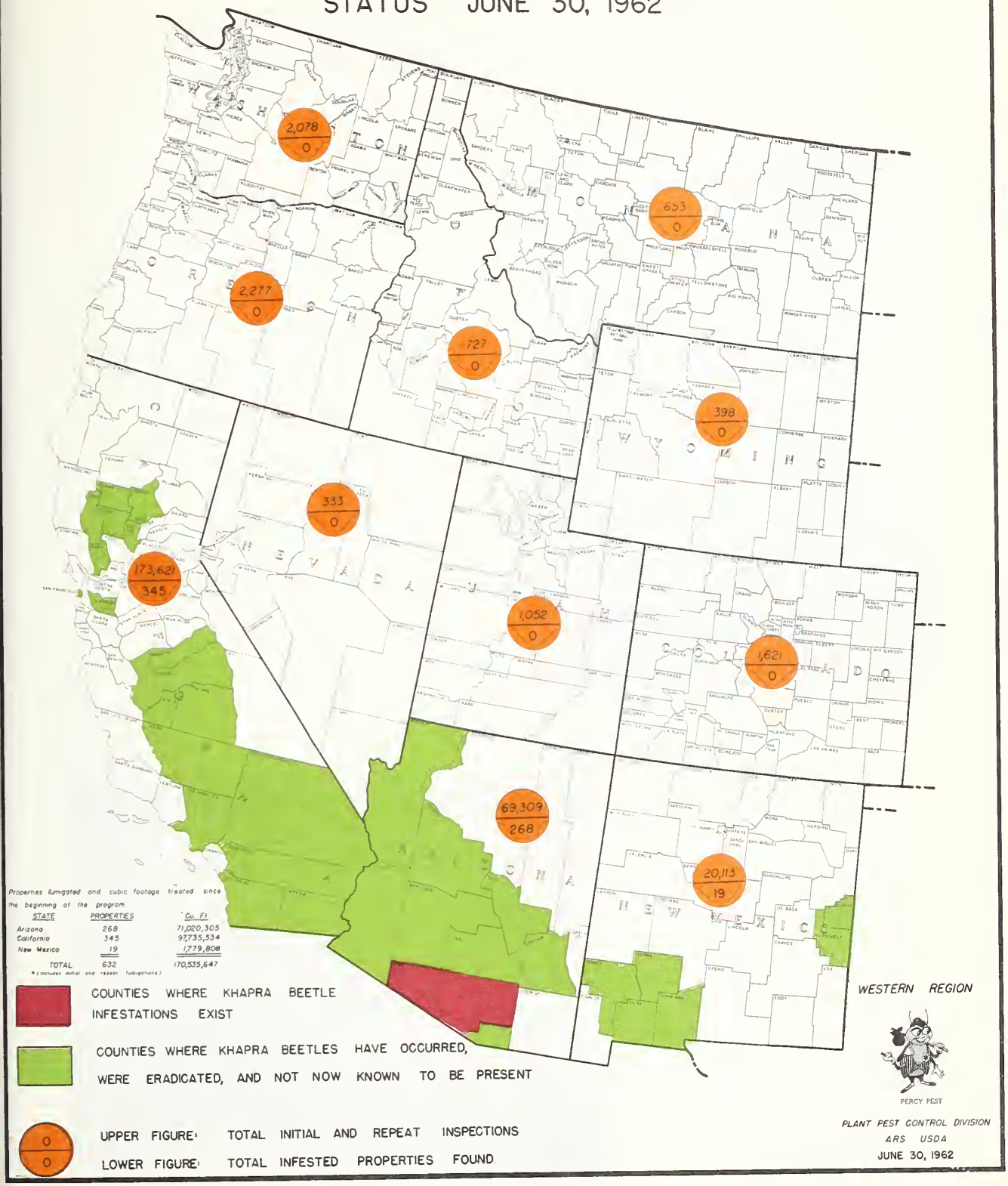
It is with a great sense of uneasiness that we regard the continued interception of khapra beetles at maritime ports by the Plant Quarantine Division. Apparently, this country will continue to be subjected to reinfestation from abroad.

A revision of the khapra beetle portion of the survey manual was prepared, submitted, and approved by the Division Director during the fiscal year.

It is suggested that additional investigational work be undertaken on closely related Trogoderma species such as glabrum. This taxonomic study might relieve our occasional embarrassment and confusion stemming from the extreme difficulty of accurately and sharply differentiating the species.

KHAPRA BEETLE ERADICATION

STATUS JUNE 30, 1962



Properties fumigated and cubic footage treated since the beginning of the program

STATE	PROPERTIES	Cu. Ft.
Arizona	268	71,020,305
California	345	97,735,534
New Mexico	19	1,779,808
TOTAL	632	170,535,647

* (Includes initial and repeat fumigations)

COUNTIES WHERE KHAPRA BEETLE INFESTATIONS EXIST

COUNTIES WHERE KHAPRA BEETLES HAVE OCCURRED, WERE ERADICATED, AND NOT NOW KNOWN TO BE PRESENT

0 / 0

UPPER FIGURE: TOTAL INITIAL AND REPEAT INSPECTIONS

LOWER FIGURE: TOTAL INFESTED PROPERTIES FOUND

WESTERN REGION

PERCY PEST

PLANT PEST CONTROL DIVISION
ARS USDA
JUNE 30, 1962

GPO 955289

Khapra Beetle

Can be found in the strangest places

Wheat, rice, beans in metal cans in basement storage.





Wheat, rice, beans in barrel and cans in carport storage room.

SURVEY AND CONTROL ACCOMPLISHMENT

Program Khapra Beetle Eradication

Fiscal Year 1962

State	Properties		Properties Treated	Volume Fumigated (cu. ft.)
	Inspected	Infested		
Arizona	16,823	9	8	2,059,165
California	20,685	1 (reinf.)	4	3,681,130
Colorado	327	0	0	0
Idaho	268	0	0	0
Montana	54	0	0	0
Nevada	45	0	0	0
New Mexico	3,774	0	0	0
Oregon	278	0	0	0
Utah	145	0	0	0
Washington	320	0	0	0
Wyoming	123	0	0	0
Totals	42,842	10	12	5,740,295

Since the beginning of the program, there were 271,394 properties inspected. Infestation totals are: Arizona, 268; California, 345; and New Mexico, 19. Infested volume found and treated from the beginning: Arizona, 71,020,305* cubic feet; California, 97,735,534** cubic feet; New Mexico, 1,779,808.

*Cubic footage includes 9 reinfestations in Arizona with a total of 7,733,128 cubic feet.
**Cubic footage includes 27 reinfestations in California with a total of 14,081,683 cubic feet.

SUMMARY OF ASSOCIATED ACTIVITIES

Program Khapra Beetle

Fiscal Year 1962

Area	Public Meetings Attended	Presentations					Feature & News Stories	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.	Infest.Map & Posters	
Arizona	3	2	4	1				3	60	6,000		
California		6	12	54				15	3,306	1,400	1	
Colorado												
Idaho	1											
Montana									54	54		
Nevada	1	1	1				1			65		1
New Mexico												
Oregon									250			
Utah	6	4	4				3			210		3
Washington												
Wyoming								1	100			1
Total	11	13	21	55			4	19	3,770	7,729	1	5

MEXCAN FRUIT FLY

Because of the proximity to fruit fly infested areas in Mexico, detection and preventive applications of control materials are scheduled activities in Southern California and Arizona.

Work is more intensive in California due to the heavy cross-border traffic. Host materials and vehicles are potential carriers. California presents favorable climatic conditions and extensive host plantings, both conducive to the survival and establishment of the pest.

A limited number of traps are operated in the Yuma-San Luis area of Arizona during the winter months. They are then moved to the Nogales area for an optimum three-month period of operation. There have been no "positive" specimens recovered. In San Diego County, California, 2,014 traps were operated throughout the year, supplemented by visual examination of host fruits growing along the International Border.

To further protect California from this pest, a spray program is carried on cooperatively with the California State Department of Agriculture. The Division furnishes the insecticide. During the fiscal year 90,365 hosts were sprayed on 22,431 properties; 96,185 nonhost trees and 800 acres of brushland were sprayed by aircraft along the Border area.

Although infested fruit continues to be intercepted and fruit flies trapped in Border cities in Mexico, the trapping-spraying program appears to be effective in preventing the establishment of the Mexican fruit fly in California.

SUMMARY OF ASSOCIATED ACTIVITIES

Program Mexican Fruit Fly

Fiscal Year 1962

State	Public Meetings Attended	Presentations					Feature & News Stories	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.	Infest.Maps & Posters	
Calif.		1	12	15				12	2,560	500	1	
Total		1	12	15				12	2,560	500	1	

MORMON CRICKETS

During the year Utah had the most serious and widespread infestations of Mormon crickets in the Region. A total of 21,857 acres was baited in San Juan County and 2,500 acres in Millard County in June. The San Juan County infestation was located on federal lands. In Millard County much of the infested land was privately owned, and the owners cooperated fully by paying for half of the bait and spreading all of it. The program was outstandingly successful. Potentially dangerous infestations were practically eliminated.

Elsewhere, crickets required control only in Nevada, where a total of 500 acres of federal land was baited on July 6 and 7. This was in Pershing County, and the preventive control measures were taken to stop migration and infestation of adjacent, rugged range areas.

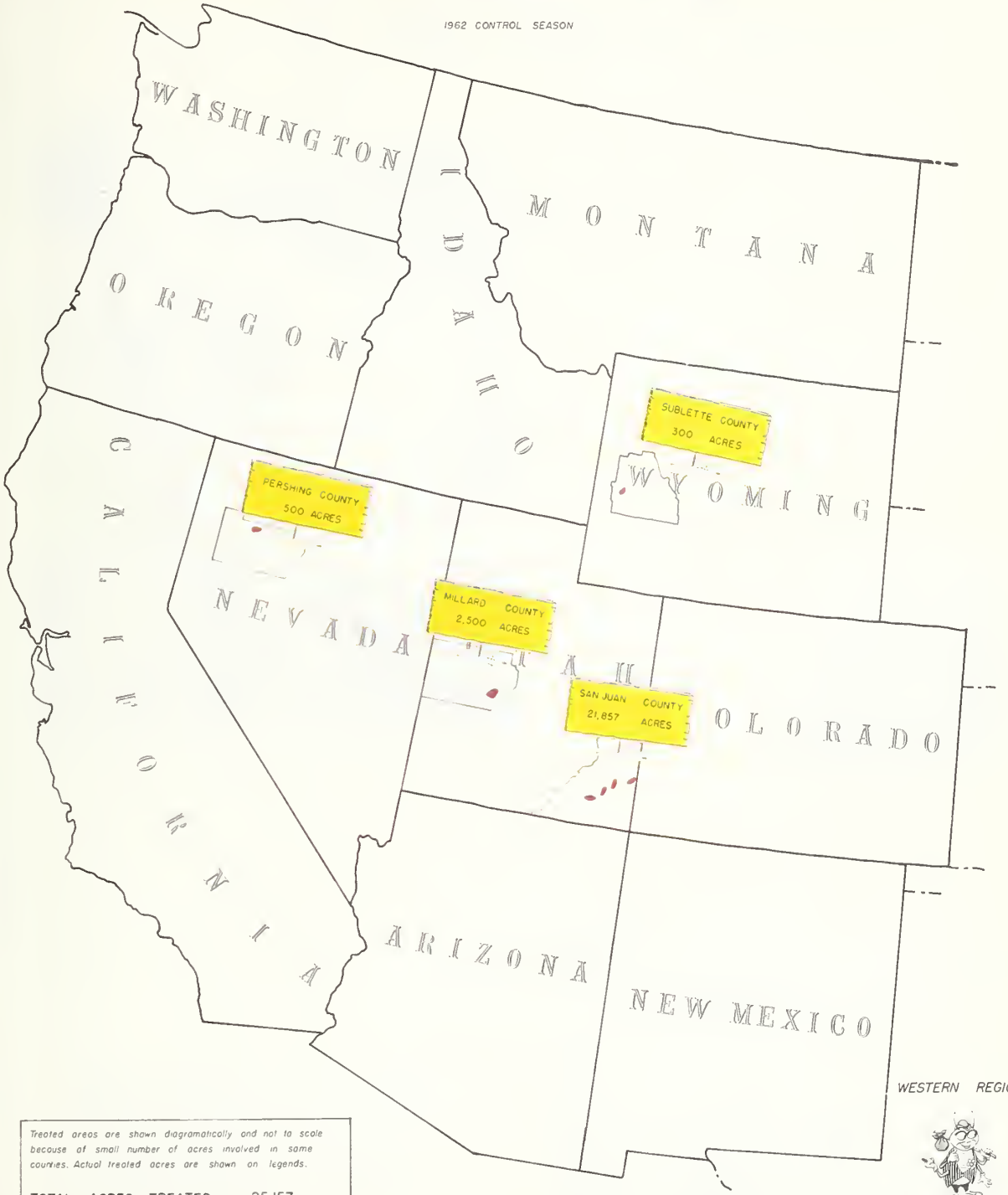
Colorado, Idaho, Montana, Oregon, and Wyoming report light to moderate infestations within their boundaries. The acreage which may possibly develop in 1963 is expected to be small and will be verified when the results of adult surveys are known.

Our policy of searching out small bands of these migratory insects and controlling them before they reach outbreak proportions has proved to be most effective. Extensive, area-wide infestations have not developed since this procedure has been followed.

MORMON CRICKET CONTROL — RANGELAND

LOCATION OF AREAS COOPERATIVELY TREATED

1962 CONTROL SEASON



Treated areas are shown diagramatically and not to scale because of small number of acres involved in some counties. Actual treated acres are shown on legends.

TOTAL ACRES TREATED — 25,157

WESTERN REGION

PLANT PEST CONTROL DIVISION
ARS USDA
AUGUST 1962

GPO 965211

Mormon Crickets

Once a major western range grass pest is now held in check.

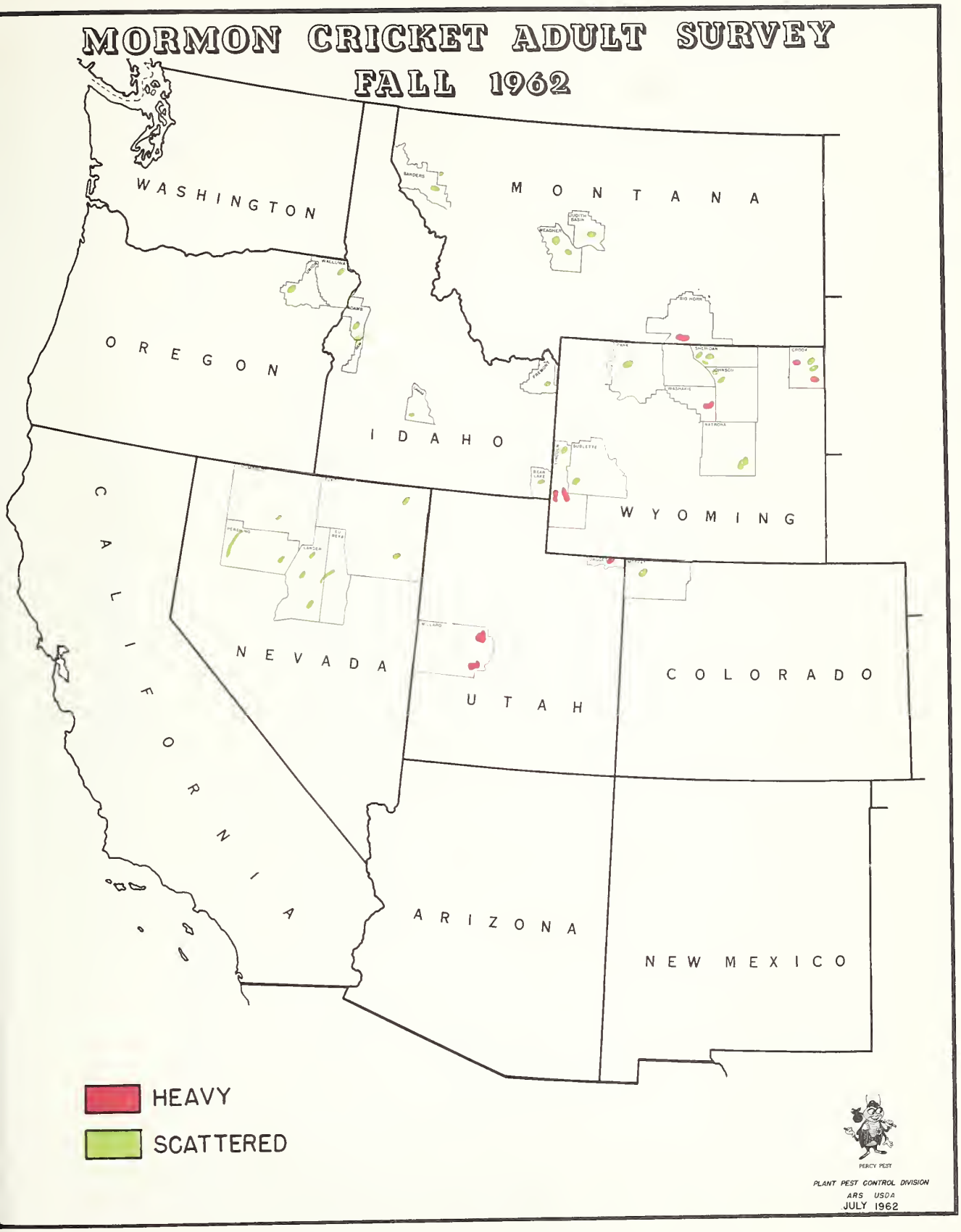


Mixing rolled steamed wheat with aldrin, using mobile continuous mixer. Capacity--80 tons mixed bait per day.



Using a broadcaster spreader with auxiliary motor, mounted on power wagon, to spread aldrin-impregnated rolled steamed wheat for control of crickets.




MORMON CRICKET ADULT SURVEY
FALL 1962
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
COLORADO
ARIZONA
NEW MEXICO
HEAVY
SCATTERED
PERCY PEST
PLANT PEST CONTROL DIVISION
ARS USDA
JULY 1962

GPO 965289

SURVEY AND DETECTION REPORT

Program Mormon Cricket Fiscal Year 1962

State	NUMBER OF ACRES INFESTED	
	Adult Survey	Nymphal Survey
Colorado	5,000	5,000
Idaho	3,500	4,000
Montana	65,000	10,000
Nevada	23,200	23,500
Oregon	1,000	--
Utah	--	22,500
Wyoming	5,200	600
Totals	102,900	65,600

SUMMARY OF ASSOCIATED ACTIVITIES

Program Mormon Cricket

Fiscal Year 1962

State	Public Meetings Attended	Presentations					Feature & News Stories	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.	Infest.Maps & Posters	
Nevada	2						5			25		1
Oregon									3		3	
Utah	4	7	8		1		4					3
Wash.									3		3	
Wyoming	1	1							5		10	
Total	7	8	8		1		9		11	25	16	4

PEACH MOSAIC ERADICATION

Cooperative Plant Pest Control, State, and county programs were conducted in 11 counties in California, 3 counties in Colorado, and 2 counties in Utah. Peach mosaic infected trees were found and destroyed in 3 California counties, 1 county in Colorado, and 2 Utah counties. There were no infected trees found in one California and two Colorado counties previously infected. Peach mosaic incidence remained at a low level in California and Colorado.

Washington County, Utah, was found to be reinfected in 1961, and the incidence in that state was higher than it had been for the past several years. This spring, the State and Washington County performed cleanup work and removal of abandoned trees. It is expected that the disease will readily respond to these suppressive measures.

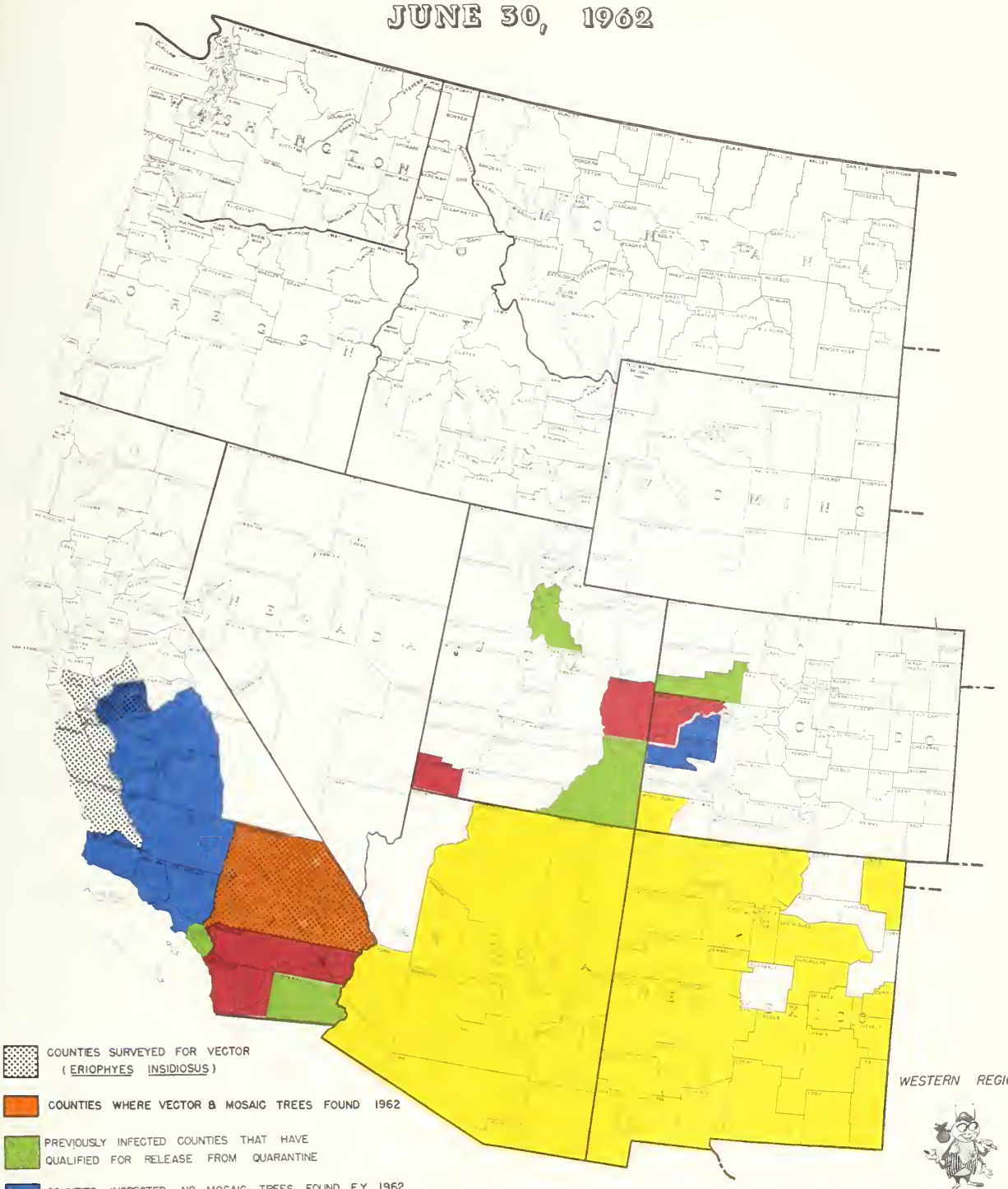
Even though control results have been exceptionally good for the past three years in Colorado, there could be a sharp increase in disease incidence because of orchard neglect in some Mesa County areas.

A cooperative peach mosaic vector survey was conducted with negative results in the California counties of San Luis Obispo, Monterey, Stanislaus, Merced, San Benito, and Santa Clara.

A vector control demonstration initiated by Entomology Research in 1961 was continued this year. To date, this demonstration has involved one spray application at petal fall, using Diazinon applied with an orchard sprayer to some 1600 host trees in the Lytle Creek area, San Bernardino County, California. Results to date have not been conclusive.

Regulatory activities included the cooperative inspection of 199 nurseries and their budwood sources in the regulated areas in the States of California, Utah, and Colorado. One nursery operating in the infected area of Washington County, Utah, agreed to destroy all nursery host plants of the peach mosaic disease. The remaining 198 nurseries and their budwood sources met the certification requirements of the Uniform States' Quarantine.

PEACH MOSAIC DISEASE CONTROL
JUNE 30, 1962



COUNTIES SURVEYED FOR VECTOR (ERIOPHYES INSIDIOSUS)

COUNTIES WHERE VECTOR & MOSAIC TREES FOUND 1962

PREVIOUSLY INFECTED COUNTIES THAT HAVE QUALIFIED FOR RELEASE FROM QUARANTINE

COUNTIES INSPECTED-- NO MOSAIC TREES FOUND F Y 1962

COUNTIES INSPECTED-- MOSAIC TREES FOUND F Y 1962

COUNTIES INFECTED-- NO INSPECTION F Y 1962

WESTERN REGION

PERCY PEST

PLANT PEST CONTROL DIVISION
ARS USDA
JUNE 30, 1962

GPO 965211

NURSERY INSPECTION - REGULATED AREAS

Program Peach Mosaic Eradication

Fiscal Year 1962

State	No. Counties Inspected With Nurseries	Number Nurseries Inspected	Number Nursery Trees Inspected	Environs Inspected				
				Properties		Trees		
				Inspected	Infected	Inspected	Infected	Removed
California	4	197	17,610	68	0	280	0	0
Colorado	1	1	2,830	12	0	5,477	0	0
Utah	1	1	All host trees destroyed					
Totals	6	199	20,440	80	0	5,757	0	0

SUMMARY OF INSPECTIONS

Program Peach Mosaic Eradication

Fiscal Year 1962

State	Properties		Trees		
	Inspected	Infected	Inspected	Infected	Removed
California	6,588	146	440,070	442	324*
Colorado	1,636	262	1,082,598	594	594
Utah	1,311	20	67,694	105	105
Totals	9,535	428	1,590,362	1,141	1,023

* 118 peach mosaic trees found and not removed in the vector control demonstration being conducted by Entomology Research, Lytle Creek, San Bernardino County, California. This represents an accumulation of mosaic trees for the years 1961 and 1962.

SUMMARY OF ASSOCIATED ACTIVITIES

Program Peach Mosaic Eradication

Fiscal Year 1962

State	Public Meetings Attended	Presentations					Feature & News Stories	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.	Infest. Maps & Posters	
California		2	14					11	2,734	25	1	
Colorado	12	2	1	0	0	0	0	0	0	100	0	264
Utah	6	8	9	0	1	0	2	0	0	175	0	4
Total	18	12	24	0	1	0	2	11	2,734	300	1	268

PINK BOLLWORM

Four Western States; namely, California, Arizona, New Mexico, and Nevada grow cotton with planted acreages of approximately 900,000, 400,000, 200,000, and 3,000, respectively.

California, Nevada, and the two westernmost counties of Arizona have thus far remained free of any known infestation of pink bollworms. New Mexico is within the generally infested area while the regulated portion of Arizona is designated as an eradication area. In New Mexico's Rio Grande Valley, pink bollworm incidence rose slightly in the fall of 1961. This was also true in the three eastern counties of Arizona where no cooperative control program involving insecticides was conducted. Control work, primarily cultural, continued on a voluntary basis in New Mexico, while in eastern Arizona cultural control practices were performed as a requirement of state regulations.

Survey activities in New Mexico, California, and Nevada continued at last year's pace except in Arizona where the number of light traps was reduced by 40%. Only one moth was caught this year in the eradication area of central Arizona near Tempe. Eighteen gin trash machines were operated in Arizona, eight in California, and one in Nevada.

The 1962 control season insecticide program in central Arizona involving 1159 individual acres started on May 17 and was completed on July 17. Nine applications were made at 6-day intervals for a cumulative total of 10,358 treated acres using either Sevin or DDT sprays. By comparison, the 1961 insecticide program comprised 11,058 individual acres for a cumulative total of 106,459 treated acres.

Fall and winter surveys included inspection of 219,000 bushels of gin trash and 50,000 lint cleaner examinations with the recovery of only four worms from the eradication area and 2500 from eastern Arizona. In western Arizona an estimated 783,000 blooms were inspected with negative results and 286,000 bolls were examined statewide with the finding of 50 larvae, all in eastern Arizona.

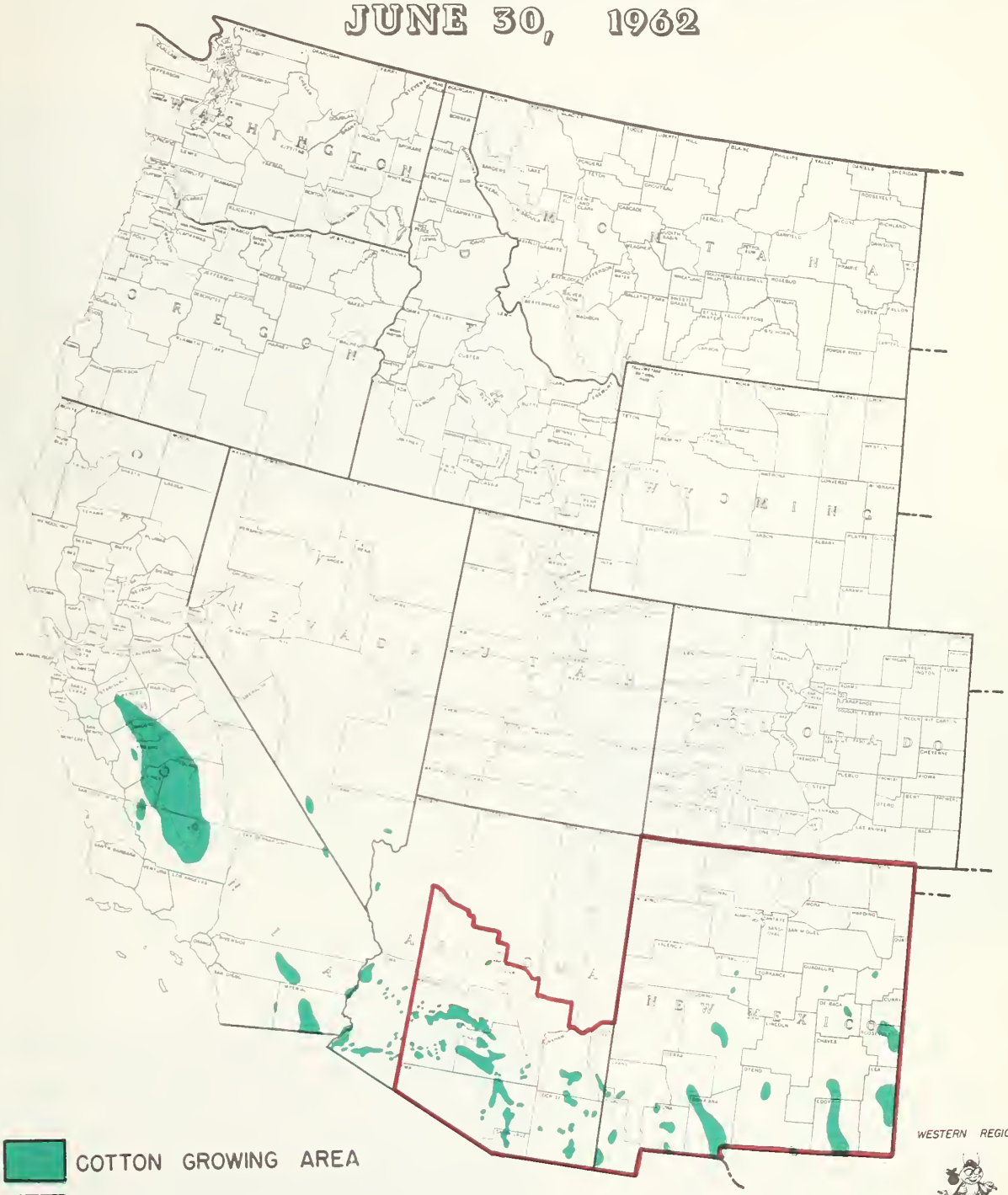
The above-mentioned surveys disclosed that infestations were limited to 302 acres (242 in Pinal County and 60 in Maricopa County).

State and Federal quarantine regulations continued in force throughout the fiscal year. Growing of stub cotton was prohibited in all areas of the state. The stalk destruction and plow-under deadline was set back to February 28, 1962, and the delayed planting date was set forward to March 15, 1962. Regulations regarding covering of trailers, gin sanitation, seed sterilization, certification for movement of hazardous materials and equipment, etc., remained in force.

In the State of New Mexico 5,780 tons of treated commodities were certified for movement.

PINK BOLLWORM CONTROL—ERADICATION

JUNE 30, 1962



GPO 984879

Pink Bollworm

Every precaution is taken to assure success of the eradication program.



Loading unsterilized planting seed for movement to delinting plant.

Temporary fumigation chamber used to fumigate unsterilized planting seed destined for a delinting plant.

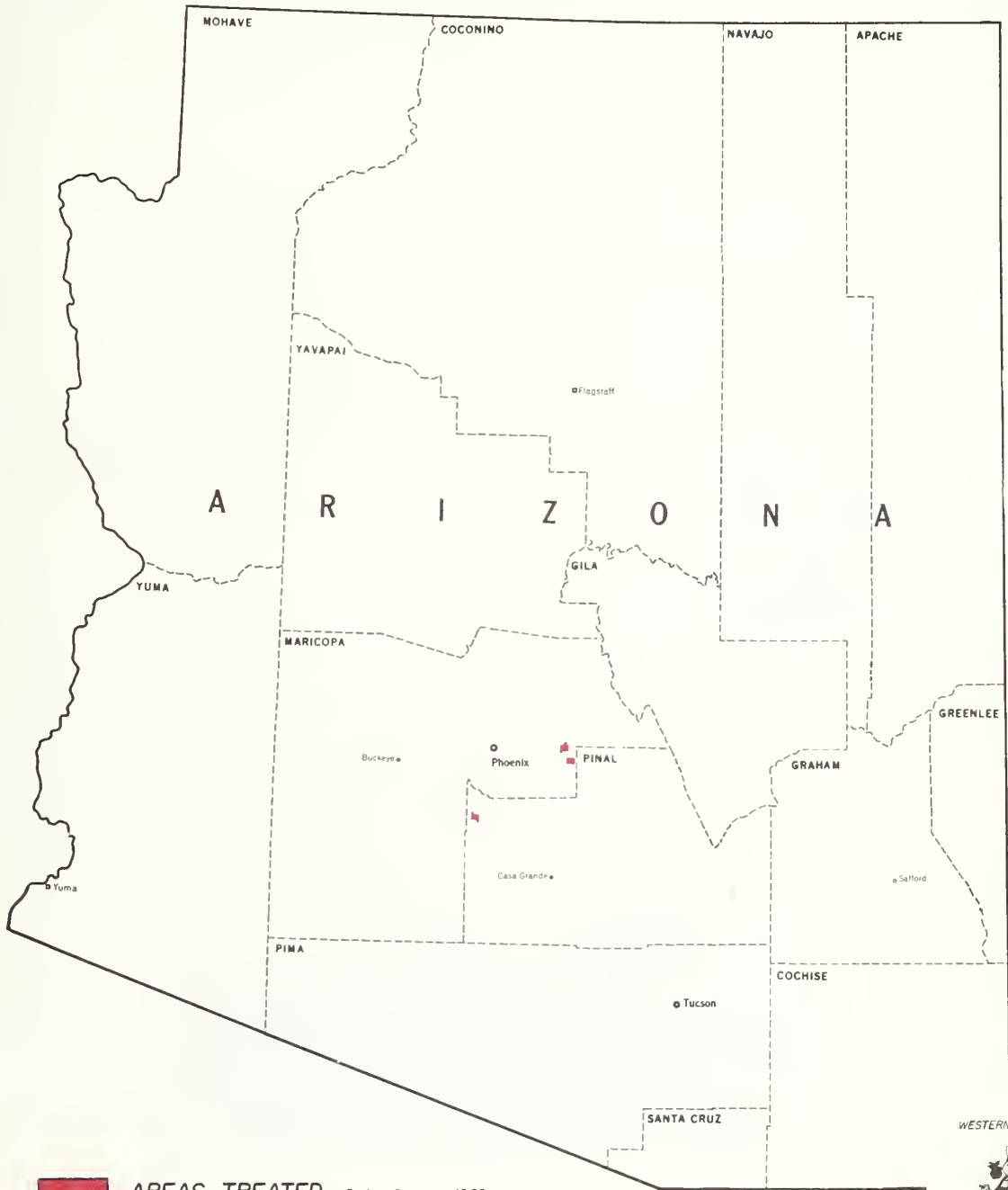




Portable gin trash disposal fan for processing trash after it has been run through a gin trash survey machine. Used in areas where local ordinances prohibit burning the trash.

PINK BOLLWORM ERADICATION

FISCAL YEAR - 1962



AREAS TREATED Spring- Summer 1962

(Estimated acres treated - 1159)

WESTERN REGION

PERCY PEST

PLANT PEST CONTROL DIVISION

ARS USDA

JULY 1, 1962

GPO 984879

Pink Bollworms

Have little chance to escape detection in ARIZONA

Light traps operated in mountain pass areas between generally infested eastern Arizona and the central eradication area. Lush cotton plants maintained at site of each light as added attraction to the pink bollworm moth.





A battery of trash machines operated at a central location to save on personnel costs and travel time. These five machines processed 59,000 bushels of trash from 59 gins during 1961-62 season.

CONTROL ACCOMPLISHMENT REPORT

Program Pink Bollworm Control

Fiscal Year 1962

STATE	INSECTICIDE No. Acres Treated		HERBICIDE	MECHANICAL
	Ground	Air	No. Plants Treated	No. Acres Treated
Arizona	391	53,250	53	360,758

REGULATORY ACTIVITY REPORT

Program Pink Bollworm Control

Fiscal Year 1962

STATE	No. Props.	INSPEC. FOR CERTIF.		COMMODITY LOTS TREATED				
				Fumigated			Heated	Other
		Proces. Plants	Other	Cotton Prod.	Mach. & Equip.	Other	Cotton Prod.	Cotton Prod.
Arizona	5,864	6,677	2	2,749	36	--	314,668	838,720
New Mexico	26	2		660	7	62	--	5,055
Totals	5,890	6,679	2	3,409	43	62	314,668	843,775

SURVEY AND DETECTION REPORT

Program Pink Bollworm

Fiscal Year 1962

State	Number Properties Surveyed	Bushels	Number Acres Surveyed	Number Traps in Use	Number Positive Specimens	Number Properties Infested	Number Acres Infested
Arizona	961	219,034	19,396	150	5*	32	1,376
California	2,239	73,877	210,739	136			
Nevada		255	3,502	8			
Totals	3,200	293,166	233,637	294	5	32	1,376

* Includes 4 larvae.

SUMMARY OF ASSOCIATED ACTIVITIES

Program Pink Bollworm

Fiscal Year 1962

State	Public Meetings Attended	Presentations					Feature & News Stories	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.	Infest.Maps & Posters	
Arizona	7	3	4	2			3	2	200	100		
Calif.			11					11	742			
Nevada	2	1					2					
Total	9	4	15	2			5	13	942	100		

PLANT PEST SURVEY

Cooperative Economic Insect Survey

The number of cooperative survey agreements in the Western Region remained at seven during the fiscal year. No new contracts were under consideration.

Interest in insect detection and survey continues to gain attention in all states, as indicated by meetings on the subject and increased personnel assigned to state staffs with duties emphasizing this phase of entomology. Those responsible are becoming more and more aware of the threat of new economic insect pests being introduced and becoming established.

Beet Leafhopper (Circulifer tenellus)

Two surveys, one in January and the other in March, were made in the beet leafhopper spring breeding areas of southern Utah and Nevada, southeastern California, and southwestern Arizona. Brief summaries of survey findings were immediately prepared after each trip and distributed to appropriate state agencies for use within states as they believed necessary.

Southern Plant Pest Control Regional personnel surveyed the spring breeding area in southeastern New Mexico and incorporated their findings in a combined report for Texas and New Mexico.

In southwestern Idaho similar surveys were made in April on predominantly Federally-owned land where beet leafhoppers overwinter as adults. Followup delimiting surveys were found necessary and revealed the necessity for treating nearly 14,000 acres of Bureau of Land Management land in the Glenns Ferry area. Insecticides applied to these heavier beet leafhopper populated areas prevented buildup and subsequent movement to nearby extensive bean and beet acreages.

Potato Psyllid (Paratrioza cockerelli)

A survey for potato psyllid was made in late February in the spring breeding areas of Arizona and California. Results of the survey were summarized and released immediately to those northerly states concerned. Overwintering populations were the heaviest recorded since Plant Pest Control Division assumed responsibility for the survey.

The potato psyllid spring breeding area of New Mexico (south of Las Cruces) was checked by Southern Regional personnel in conjunction with their survey of the Texas area, and findings were released in a combined report.

Insect Detection

Limited detection surveys were made in some states as regular program responsibilities permitted. Some of the pests checked for were: European chafer (Amphimallon majalis) in Arizona; Mexican bean beetle (Epilachna varivestis) in Idaho; witchweed (Striga asiatica) in all Western States; imported fire ant (Solenopsis saevissima richteri) in Arizona; gypsy moth (Porthetria dispar) in California and Oregon, where traps, lure, and necessary supporting items were furnished to cooperators for their use.

Cotton Boll Weevil (Anthonomus grandis)

Late in the fall of 1961 a survey was made for this pest in exposed cotton fields adjacent to railroad sidings in the lower Rio Grande Valley of New Mexico. During June 1962 additional surveys were made in cotton fields adjacent to favorable hibernation habitats. Results were negative.

European Pine Shoot Moth (Rhyacionia buoliana)

In cooperation with State personnel, our employees assisted in the inspection of nurseries for European pine shoot moth in Portland and vicinity, Oregon, and in Salt Lake City and vicinity, Utah. No infestations were found. State and U.S. Forest Service personnel located several minor infestations while making a general survey of residential and adjacent areas of Portland. All infested trees thus found were immediately destroyed.

Halogeton (Halogeton glomeratus)

Plant Pest Control personnel in Utah located and reported to Bureau of Land Management several new isolated patches of halogeton observed during the course of their program work.

Public Relations

This fiscal year, added emphasis was placed on reaching the public to tell them our story about Plant Pest Control. Division exhibits on Khapra Beetle, Japanese Beetle, and Survey and Detection were shown at the California and Arizona State Fairs, and at 11 other county fairs and expositions in the two states. The exhibits were augmented with program brochures, program movies, slides, and an array of detection tools; such as, light traps, Japanese beetle traps, fruit fly traps, etc. These displays, varied so as to appeal to all ages, were shown in both agricultural and urban areas, giving approximately $2\frac{1}{2}$ million visitors an opportunity to see them.

Nine movies of varying lengths were shown. The total showing for all films was 397, viewed by 15,955 persons. Approximately 35,000 brochures and picture sheets were distributed.

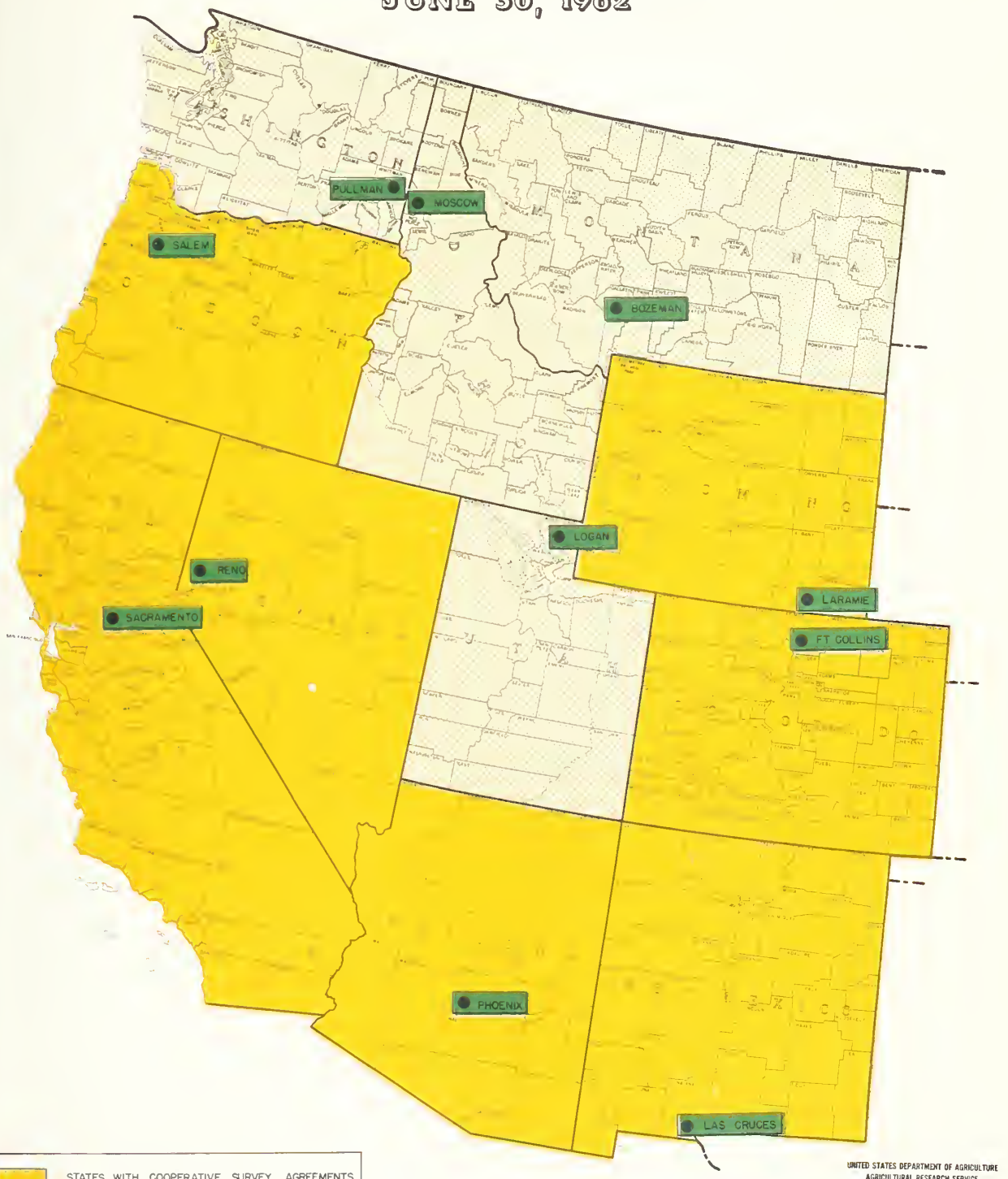
Taking advantage of the public service time offered by TV stations, we have arranged to show 90-second films about witchweed in each of the Western

States. We hope to get more of this type of short film in order that we may appeal to the public and encourage their "alertness" and "cooperation" in detecting new pests.

A variety of attention-attracting stickers, posters, and related devices were originated in the Region and given wide distribution among cooperators and Agricultural Research Service personnel.

COOPERATIVE ECONOMIC INSECT SURVEY

JUNE 30, 1962



State Survey Coordinators
For Economic Insect Survey Reports

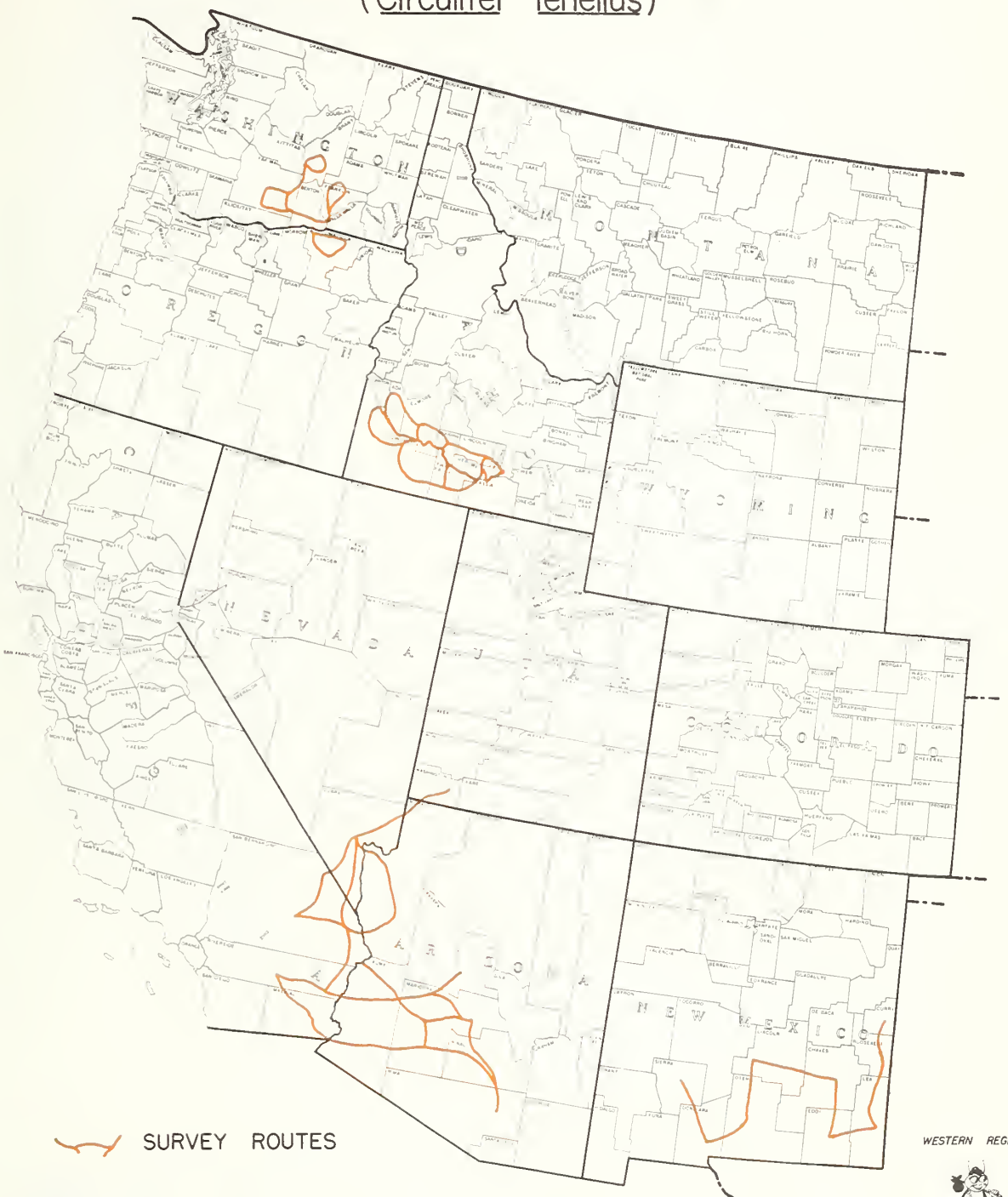
Arizona	Dr. James N. Roney, Extension Entomologist University of Arizona, Phoenix
California	Mr. Robert W. Harper, Chief, Bureau of Entomology State Department of Agriculture, Sacramento
Colorado	Dr. Leslie B. Daniels, Head, Department of Entomology, Colorado State University, Ft. Collins
Idaho	Dr. H. C. Manis, Head, Department of Entomology Univeristy of Idaho, Moscow
Montana	Dr. James H. Pepper, Head, Department of Zoology and Entomology, Montana State College, Bozeman
Nevada	Mr. Lee M. Burge, Director, Division of Plant Industry State Department of Agriculture, Reno
New Mexico	Mr. Dallas Rierson, Director, New Mexico Department of Agriculture, New Mexico State University University Park
Oregon	Mr. Hugh Taylor, Chief, Division of Plant Industry State Department of Agriculture, Salem
Utah	Dr. George F. Knowlton, Extension Entomologist Utah State University, Logan
Washington	Dr. Horace S. Telford, Chairman, Department of Entomology, Washington State University, Pullman
Wyoming	Dr. Robert E. Pfadt, Head, Department of Entomology University of Wyoming, Laramie

Survey Entomologists

Arizona	Mr. Leon Moore Arizona Commission of Agriculture and Horticulture	Phoenix
California	Mr. Ronald Hawthorne State Department of Agriculture	Sacramento
Colorado	Mr. Leonard E. Jenkins Colorado State University	Ft. Collins
Nevada	Mr. Robert C. Bechtel State Department of Agriculture	Reno
Oregon	Mr. Joseph Capizzi State Department of Agriculture	Salem
Wyoming	Mr. D. G. Fullerton University of Wyoming	Laramie

BEET LEAFHOPPER SURVEY

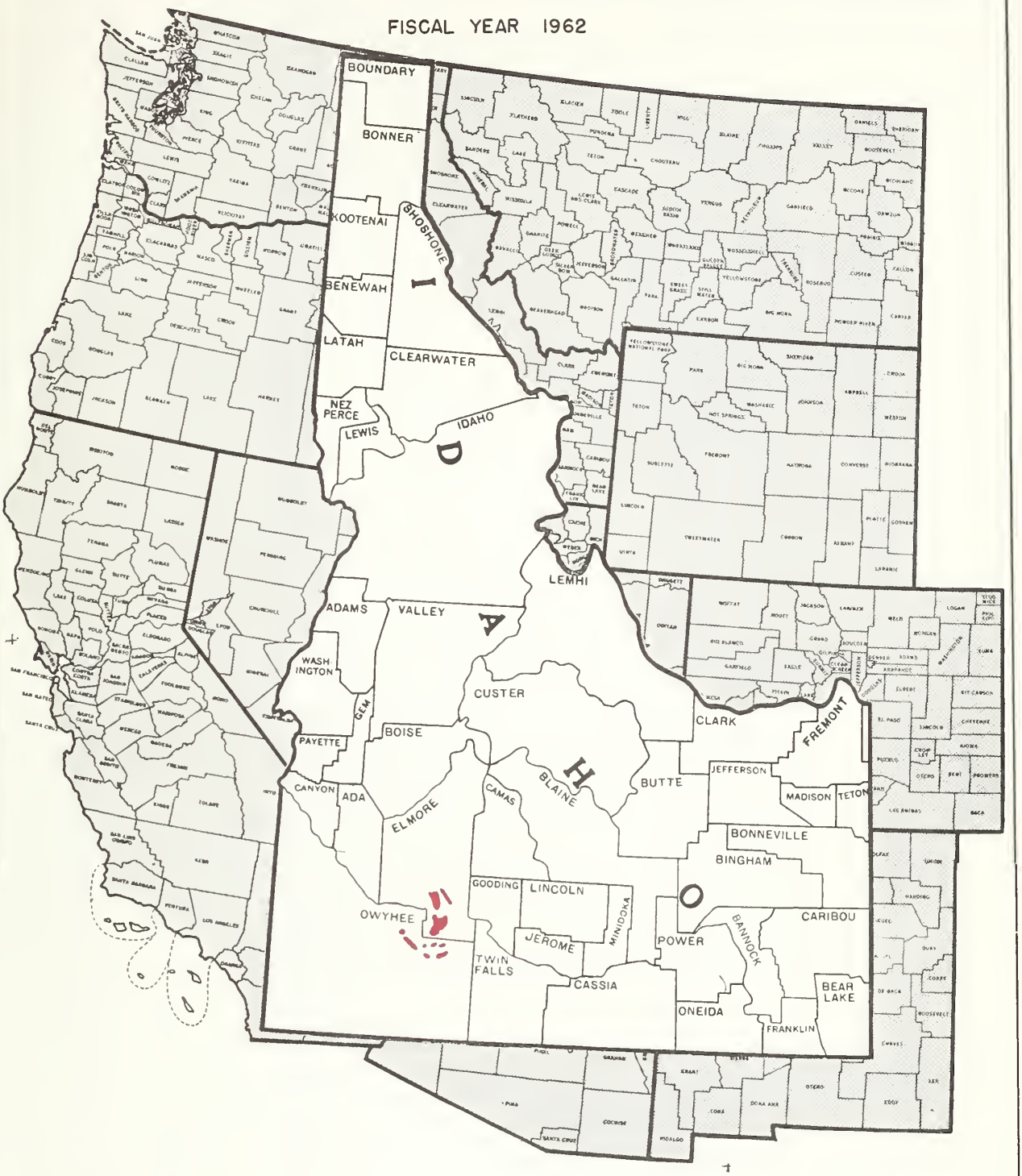
(Circulifer tenellus)



GPO 984879

BEET LEAFHOPPER CONTROL PROGRAM

FISCAL YEAR 1962



WESTERN REGION

AREA WHERE CONTROLS APPLIED

(Approx. 14,000 acres treated)



PERCY PEST

PLANT PEST CONTROL DIVISION
ARS USDA
JUNE 30, 1962

GPO 985030

SUMMARY OF ASSOCIATED ACTIVITIES

Program Plant Pest Survey

Fiscal Year 1962

State	Public Meetings Attended	Presentations					Feature & News Stories	Extent These Aids Were Used				Special Reports
		Talks	Slides	Films	Radio	TV		Exhibits	Bul.	Cir.	Infest.Maps & Posters	
Arizona	3	3	5	5		4	1	9	50	9,900	160	
Calif.		3	121	252				11	7,358			
Idaho	4											1
Oregon	1	1										
Utah	2	12	5		1		3		340			6
Total	10	19	131	257	1	4	4	20	7,748	9,900	160	7

Public Relations

Keeping the public informed about Plant Pest Control Division



Division Display, Arizona State Fair, Phoenix, 1962



California State Fair

Sacramento, 1962

Charged With Theft



Yakima, Wash.

A "cooperative" citizen reported Percy Pest when he was seen hijacking fruit from orchards.... .....Percy insisted....."only my share of the Nation's crop."...

..... Judge SELF congratulated the alert citizen.....

YOU *CAN BE A COOPERATIVE CITIZEN*

BE ALERT *FOR ANY NEW PLANT PEST OR UNUSUAL CROP OR PLANT DAMAGE*

REPORT PROMPTLY

TO YOUR NEAREST AGRICULTURAL OFFICIAL

Early detection and prompt reporting could save many dollars in losses to crops, stored products, forests and ornamentals.

INSECT DETECTION IS FOR YOUR PROTECTION

Plant Pest Control Division Agricultural Research Service United States Department of Agriculture

GPO 984000

SURVEY AND DETECTION REPORT

Program Plant Pest Survey

Fiscal Year 1962

Pest	No. Properties Surveyed	No. Acres Surveyed	No. Hosts Examined
Cotton boll weevil		4,328	
European pine shoot moth	72	109	1,680,685
European chafer		60	
Imported fire ant	20		
Sorghum midge		835	
Witchweed	62	5,104	
Totals	154	10,436	1,680,685

Insect Detection

INSECT DETECTION IS FOR YOUR PROTECTION
BE ALERT REPORT PROMPTLY ANY NEW OR UNUSUAL PLANT PEST TO YOUR NEAREST AGRICULTURAL OFFICIAL. —Plant Pest Control Div., ARS, USDA

Please FASTEN YOUR SEAT BELT



PERCY PEST

STAY ALIVE ! YOU ARE NEEDED TO DETECT NEW INSECT PESTS.

BE ALERT !

BE FIRST

TO DETECT AND REPORT ANY NEW PLANT PEST

GPO 965386